MEMORANDA FOR EMERGENCIES

The Veterinarian's Pocket Remembrancer.

MEMORANDA FOR EMERGENCIES;

OR,

The Veterinarian's Pocket Remembrancer:

BEING

CONCISE DIRECTIONS FOR THE TREATMENT OF URGENT OR RARE CASES,

EMBRACING

SEMEIOLOGY, DIAGNOSIS, PROGNOSIS, SURGERY, THERAPEUTICS, TOXICOLOGY, DETECTION OF POISONS BY THEIR APPROPRIATE TESTS, HYGIENE, ETC. ET

GEORGE ARMATAGE, M.R.C.V.S.

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TO

HIS MANY EXCELLENT FRIENDS

THE VETERINARY PROFESSION,

THIS LITTLE WORK

IS

Respectfully Inscribed

BY

THEIR FAITHFUL AND OBLIGED SERVANT,

THE AUTHOR.

PREFACE.

In the vast amount of information relative to the nature, habits, and ailments of our domestic animals, which the Veterinary Surgeon desires to retain in his memory, it is probable that many points of interest—called for only under exigent circumstances, and at rare intervals—give way before the details of daily observation, and are either imperfectly remembered, or, it may be, altogether forgotten. The present little work is the fruit of an endeavour to supply useful memoranda for cases of emergency, in which brevity has been specially considered in connexion with the importance of each subject treated. It owes its origin to the desires of many professional friends. Since the appearance of a series of instructions for the Student,* the want of a collection of concise directions, suitable for the emergencies of the Veterinary Surgeon, has been repeatedly pointed out to the

* "The Clinical Note Book." Glasgow: D. Robertson. London: Longmans and Co.

Author, and his exertions have been solicited towards the acquirement of such a desideratum. The response has, however, been somewhat slow—retarded greatly by the full conviction that the attainments of others might serve the community better—and is only now sent forth with a consciousness of its numerous imperfections, and a sincere wish, notwithstanding, that it may at least attain some degree of usefulness in the mission for which it has been designed. As a valuable means of securing this end, as well as paving the way for more complete editions, the Author will feel grateful to his friends in the profession, if they will kindly point out omissions and inaccuracies; and he begs to remind those in active and extensive practice, how easily they may promote the science of Veterinary Medicine by their selection from a large stock of cumulated facts.

To George Fleming, Esq., F.R.G.S., F.A.S.L., M.R.C.S., &c., the Author's acknowledgments are due for his careful examination of the work in MS.

G. A.

Eastlake Road, Camberwell,
July, 1870.

NOTE.

The following abbreviations, which occur throughout the work, have the signification as given below.

M. M.	is given for	Mucous Membranes.
V. M. M.	„	„	Visible ditto.
P. M.	„	„	Post Mortem.
Ppte.	„	„	Precipitate.

Subjects to which reference is made in the context, where not otherwise stated, are distinguished by the title being printed in small capitals, thus :—

Artificial Respiration, at page 61, refers to that subject at page 37.

THE

POCKET REMEMBRANCER:

OR,

MEMORANDA FOR EMERGENCIES.

ABDOMEN, INJURIES TO.—These usually comprise ordinary wounds of the parietes. In some instances they are, however, aggravated by extent, modification, and nature of the parts; termination is therefore fatal or, otherwise, protracted. Occasionally, serious damage is inflicted upon the spine and viscera of the abdomen, as when the animal has been crushed between railway waggons, or violently thrown against projecting bodies in a rapid gallop during fright, &c. The liver is apt to suffer; also the stomach, intestines, or diaphragm, with the kidneys, and the bladder likewise if full. As far as ordinary wounds are concerned, the diagnosis is generally easy; but surgical interference should be delayed until the exact condition of all parts is ascertained. After it is proved that lesions are superficial and purely muscular, proceed as stated under WOUNDS.

When injury has been inflicted upon internal organs, without external lesion, the extent cannot be accurately estimated. Caution, therefore, must be exercised in pronouncing upon the case. Fatal injuries may quickly produce collapse, while it is possible that symptoms indicative of serious structural changes may be delayed some time. Such may occur when the bladder has been ruptured. Generally, however, collapse is more or less evident, and should be met by the administration of diffusible stimulants, which must be carried on with extreme caution in order, at any stage, to withdraw them promptly if reaction follows, when opiates, calmatives, derivatives, &c., are indicated. The condition of the bladder must be ascertained *per rectum*, and passing the catheter will decide, if blood is present, on the existence of rupture of that viscus or damage to the kidneys. Pallid membranes, with other signs of HÆMORRHAGE, SYNCOPE, &c. (*which see*), must be regarded with doubt and apprehension of fatality. Wounds of the abdomen, particularly at the most dependent parts, require support in addition to the usual surgical treatment, but escape of fluid accumulations must be provided for. In those which occur at the sides, there is much greater danger from collections of pus, serum, &c., which are discharged internally.

ABORTION. — This affection, which is most

commonly witnessed among cows, is presented to the practitioner in three forms, each calling for special treatment. The results of abortion vary in accordance with the stage in the period of gestation. The longer the duration, the more extensive is the connexion between mother and fœtus, as well as means for the establishment of proper expulsion at the required time. When, therefore, circumstances of an extraordinary character are productive of abortion, the effects are in direct proportion to the stage at which it has been induced. In early cases the system suffers but slightly, and our interference is mainly required for the prevention of further disease among other animals. In more advanced stages of pregnancy, great depression, or even high febrile action, may require strict attention; and in the latest, *mal-position* of the fœtus, or closure of the *os uteri*, with a corresponding non-relaxation of the pelvic ligaments, &c., may occasion difficulty in the premature labour, or want of tone in the uterus may retard the delivery. The treatment of animals that have aborted consists in the combating of high febrile action by sedatives, derivatives, &c., and depression by diffusible stimulants. Vaginal discharges should be removed regularly, and the parts treated by antiseptic fluids. The animal should be isolated, and the disposal of fœtus and membranes secured by prompt and effective burial. If the membranes are retained, they should be re-

moved before putrefaction commences. In the cow no inconvenience arises from their retention during a few days; but, if not removed in the mare, constitutional disturbance may be observed at an early stage. Vegetable tonics and stomachics are advantageously exhibited with stimulants in the cow, to promote their removal. Enemata and laxatives should be used to clear the bowels and promote a proper action, and ecbolics to assist in the contraction of the uterus and expulsion of the contents where want of tone exists. In premature labour, attended with closure of the *os uteri*, dilatation must be had recourse to. If the fingers fail to effect an entrance, or relaxation is very tardy, give chloric ether, belladonna, &c., by the mouth, and carry up the vagina a sponge saturated with the tincture or watery extract of belladonna, which should be allowed to remain for some time, the fingers being applied at intervals to test and assist the relaxation. If the impediments consist of mal-position, malformation, &c., embryotomy will probably be required. The greatest difficulty frequently exists in such cases, which arises from the want of sufficient room for operating. In order to prevent further abortion in a herd, the cause must first be ascertained. Noisome odours from putrefying material, giving rise to excitement, should be dissipated by disinfectants and burial; rampant animals removed; deleterious plants should be sought for and

pastures changed; bad food or irregular diet creating indigestion discontinued, good food and proper system being substituted; highly plethoric animals should be reduced by venesection, derivatives, &c., drastic purgatives being scrupulously avoided. A poor pasture is probably not the least valuable acquisition in such cases.

ABSCESS.—Two kinds of abscesses are recognised in veterinary practice, the *Pustular* and *Serous*.* The first is seen in two forms, *acute* and *cold*, or *chronic*. In the acute abscess much pain and constitutional disturbance is avoided or mitigated by the early application of the knife or lancet. This is particularly the case with regard to certain structures and localities. In strangles (adenitis), suffocation or roaring may be obviated. In suppuration of the humeral glands, discharge may take place in the thorax, but averted by early incision. In poll evil much destruction of tissue is saved, and in abscess of the anus or perineum, penetration of the rectum or urethra, fistulæ, &c., also are removed farther from the limits of possibility. As soon as fluctuation with pointing is evident, there should be no time lost. At the part where the skin is thinnest the sac is to be opened; but if the period of pointing has not arrived, yet the skin is thin, incision should be made at the lowest or most de-

* Or more correctly, the serous cyst.

pendent part. The knife, scalpel, or bistoury, lancet, &c., should be perfectly clean and sharp, and used in accordance with the nature of the parts where the operation is required. Well defined, prominent abscesses may be opened by puncture or excision, the lancet being employed for the former, and curved bistoury for the latter. In using these, the lancet is held firmly between the thumb and forefinger, plunged straight through the central part, or point of the abscess, and withdrawn by a downward cutting movement; the blade of the curved bistoury *is inserted at the side*, and pushed through the abscess and its walls on the opposite side, the cutting edge being outwards, when, strongly grasped in the hand, the blade is caused to divide the tissues that remain between the point and heel of the blade. When the abscess lies at a considerable depth, the coverings thick, or in the vicinity of important vessels, &c., great caution is necessary. The most useful instrument is the straight bistoury, by which the superficial tissues are carefully divided by short incisions—if through muscles, in the direction of their fibres—until the confines of the abscess are reached. The fingers should be constantly employed to detect the location of vessels, and the edge of the instrument, during withdrawal and enlargement of the orifice, turned in an opposite direction. The after-treatment consists in the use of warmth by poultices, spongio-piline, or digestives, so called,

to promote discharge. Premature closing of the wound is guarded against by the introduction of some foreign body, as oiled lint or tow, India-rubber tubing, &c. The antiseptic treatment of wounds (*which see*) may also be adopted. All stuffing, cramming, squeezing, and probing with the fingers should be avoided as unscientific and barbarous, as well as obnoxious to the future sanatory progress of the wound. In the *cold* or *chronic* abscess there are no manifestations of the vigour that characterizes the acute variety; the formation of pus is tardy, and requires to be accelerated, which may be accomplished by the use of blisters, setons, &c., and the moment pointing is observed the knife must be employed. Strong astringent injections, or the antiseptic treatment, will then be found serviceable. If the abscess is small and stationary, and there are indications of constitutional weakness, anæmia, or disease, good food and exercise may be required with vegetable tonics, or the iodide or bromide of potassium; externally, discutients, as the tincture of iodine, ointments of the biniodide of mercury, or mercury alone, astringents, &c. If the abscess of strangles assumes this form, the external treatment here described will in all probability hasten the case to a fatal termination.

The *serous* abscess or cyst appears about the knees, as a result of blows, falls, &c., sides of the thorax from pressure with the shoes in lying, &c.,

and on the haunch, thigh, and other parts from kicks, &c. &c. In contra-distinction to the pustular abscess, the serous kind is characterized by being circumscribed, soft, and fluctuating, superficial, and evenly covered, rapidly developed; no central pointing, external moisture, loss of hair, or evidences of ulceration; having a natural temperature, contents mobile, and without the manifestation of pain or constitutional disturbance. Its appearances are stationary—suffering for days no increase or diminution, but after a time slowly disappears from absorption. Treatment consists in opening by puncture, or excision and evacuation of the fluid contents, which are thin, watery, and of a reddish colour, and probably contain blood and fibrinous clots. Astringents may be used by injection, and union of the integuments to the subjacent tissues secured by pressure. If the lips of the wound have necessarily been made vertically, and a great length, the upper four-fifths may be secured by sutures.

An exception to the surgical treatment just given, may be made in many cases that occur about the poll and upper part of the cervical region in horses. From savage attacks of other animals, blows, and even in the habit of rubbing common to some of the members of this class, a large serous cyst will form towards the side, exactly upon the *obliquus capitis superior*, or *anticus* muscle—probably by reason of its greater prominence. Under these

circumstances the cicatrix resulting from opening of the cyst might be objectionable afterwards, therefore an attempt at discussion should be first thoroughly attempted.

ACCIDENTS.—In no department, possibly, of veterinary medicine is the practitioner so frequently placed under such great difficulties as when he is hastily summoned on cases of accidents to the lower animals. Messages are either only half delivered, garbled, or supplemented from the imagination, and, as is proved on examination, the case offers no resemblance to the condition which reports have conveyed. The resources of medicine are thus materially interfered with, and success denied. The officiousness of bystanders also greatly retards the attempts to arrive at truth, by their endeavours to demonstrate an acquaintance with the state of affairs. It will, therefore, reflect credit upon the practitioner who can estimate this in silence at its proper value, and pursue an investigation uninterruptedly to the end. He should endeavour to obtain all possible information in the least time, and material agents for such a purpose are his eyes and judgment. It is not wise to seek information from the person who happens to be nearest or prominent on the occasion. First ascertain under whose care the animal was at the time of the accident, and direct to him the necessary interrogatories. Let

them be constructed in such order as to facilitate the diagnosis. Having obtained sufficient data upon which to act, let the directions be given with decision, and personally superintend, as far as practicable, their being carried out. Efficient detail and arrangement being established, state the line of action to be observed until the next visit is made, and, as far as possible, select an attendant upon whom reliance can be placed. Such men are to be found even among officious grooms and bystanders, and with them kindness, firmness, and directions calculated to educate them in the principles demanded at their hands, tell forcibly, and many stupendous difficulties may be overcome. One of the greatest causes of failure with young practitioners, is a want of firmness in giving an opinion and directions; and an arrogant, austere, or despotic mode is equally reprehensible. These should be strictly avoided. Ignorance and eagerness to know the worst frequently cause misinterpretation of facts and motives, and particularly sentences that are not the offspring of mature deliberation: therefore, resist the attempts to elicit a hasty opinion. Above all, never let an absolute conclusion escape the lips until conditions are accurately investigated and circumstances carefully weighed. These accomplished, do not fail to let those who have the right receive a plain statement, *divested of medical technicalities*, including all reasonable grounds for the entertain-

ment of hope or fear. The benefit of this will be exceedingly apparent when the patient is a valuable animal, the case serious, and especially with owners who are men of education. Lastly, and particularly when states are critical, put in force every means by which good may be effected; do not withhold anything that is calculated to expedite matters towards a favourable issue on the score of trouble, but avoid everything that may tend to create bustle and confusion.

ACIDS, Mineral Poisoning by.—These agents are included in the list of chemical or corrosive irritant poisons. The signs of poisoning by them are almost identical, and consist of:—intense abdominal pain, dysphagia, painful attempts to cough, intolerable thirst, accelerated breathing, rapid, feeble, and small pulse, great depression, anxious countenance, muscular twitchings, partial sweats, with coldness of skin, increasing weakness, gradual imperceptibility of pulse, *no mitigation of agony*, and death in a few hours. In carnivora, vomition is almost constant, the matters consisting of mucus, altered blood, &c., having an acid reaction, and strongly effervescing when thrown upon the pavement, or mixed with alkaline carbonates. The mouth, tongue, lips, and teeth are corroded, the buccal membrane being either removed or hanging in ragged portions, while the underlying soft

tissues are inflamed and greatly swollen. The erosions are usually farther stained black by sulphuric acid; lemon-yellow by nitric acid; while no alteration possibly is witnessed from hydrochloric acid, excepting at rare times a dark brown colour may be produced.

Post-mortem Appearances.—Redness and erosion, with tumefaction of parts, as far as the acids have penetrated; mucous membrane charred, corrugated, and partially detached; perforation of stomach partial, or sometimes complete, with escape of contents, which are also probably blackened, either as a result of carbonization, or alteration of the blood that has escaped from corroded vessels; stomach small, and firmly collapsed if empty. These appearances also characterize the small intestines, and other parts acted upon by the acids.

Treatment.—Scrupulously avoid water and all fluids that do not contain remedial agents. The best are calcined magnesia, or carbonate of lime for sulphuric acid; or the carbonates of potash and soda, which are also available for antidotes to nitric and muriatic acids. The menstrua should be barley water, linseed tea, soap and water, oil, milk, oatmeal or flour and water, &c. The corrosive effects being neutralized, opiates, derivatives, &c., are required to control violent spasm, and stimuli to guard against depression and collapse. Soft and highly nutritious food during recovery. Œsophago-

tomy, if protracted, dysphagia results. Death is sometimes delayed for weeks. Apparent recovery takes place, but from thickening of parts of the digestive organs, the process of assimilation is greatly interfered with, and death takes place from inanition.

Tests.—*Sulphuric acid* chars organic matter when *concentrated;* it also generates intense heat if water is gradually added to it, and sulphurous acid is evolved if heated with strips of copper. In the *diluted* state it is known by giving white precipitates with the chloride of barium and solution of acetate of lead, both being insoluble. *Nitric acid* in the *concentrated* form produces a yellow colour in white fabrics, and yields ruddy fumes of nitrous acid when boiled on copper. The dilute fluid, neutralized with carbonate of potash, effervesces, and on evaporation crystals of nitrate of potash are formed; these, boiled with a little sulphuric acid and copper slips, yield the characteristic ruddy fumes. Paper steeped in a solution of these crystals burns with deflagration; the same may also be accomplished by dipping it, first into a solution of potash or its carbonate, and then into the acid fluid from the stomach. The colour of the flame is lilac. *Hydrochloric acid* in solution gives a white precipitate with nitrate of silver, soluble in liq. ammoniæ, but insoluble in nitric acid and liq. potassæ. Dried and heated on platina foil, it becomes resini-

form, melts, assumes a yellowish colour, and a perfectly sectile condition.

ACONITE — *Aconitum Napellus* — Monks-hood.—This plant provides at once one of the most useful, yet positively as dangerous a medicine as any used by the veterinary practitioner. The active principle, *Aconitina* or *Aconitine*, should never be employed, as from the very small quantity that sometimes proves fatal—equally by absorption as when given internally, it cannot be regulated with so much precision as a properly made tincture—that recommended by Dr. Fleming being the most reliable. In this form aconite is an efficient substitute for bloodletting, the results being nearly as rapidly developed, without leaving the subsequent depression that always characterizes venesection. It is therefore of great service in all acute inflammatory affections, in which the removal of high vascular action is promptly and effectively required. For this purpose the largest dose should be given first: thus, to a moderate-sized horse twenty minims may be given in a solution of liq. ammon. acet.; in four hours ten minims, and subsequently every four hours five minims, until the pulse is reduced in volume and frequency, which, in the most acute cases, is soon accomplished. Poisoning is most likely to occur from an irregular and careless mode of administration. It is not uncommon

to send out three draughts containing an equal quantity of medicines; these are to be given in one period of twenty-four hours, and the practitioner sees the case but once. Next day it is again visited and symptoms are not subdued, therefore three more draughts are left for administration. Such cases frequently prove fatal, the use of powerful sedatives, and particularly aconite, exerting a depressing action upon the heart and circulation, insures an interrupted flow of blood through the lungs; congestion takes place, and the signs of irritative fever are thus dosed with a remedy which has been mainly productive of their origin. A mixture of equal parts of Fleming's tincture of aconite and chloroform acts as a valuable remedy in neuralgia, lumbago, &c., of the dog. It is applied by means of cotton wool, and immediately covered by oiled silk, and held tightly to the part. The most severe pain is produced, which, however, subsides on removal of the application. Great care is required in order to avoid absorption, from which poisoning is sure to follow. The signs of poisoning are great depression, anxious countenance, accelerated respiration, increased rapidity and diminished volume of the pulse, and contracted pupils. In more acute cases there are nervous twitchings, nausea, salivation, slight movement of the jaws which merges into a rapid champing, uneasiness, efforts to vomit, all of which suffer aggravation, and continue until death takes

place. When any of these signs appear, the drug should be withdrawn and stimulants exhibited; and in those instances where it is desired to administer aconite, in which a small and rapid pulse is present with depression, as in influenza, &c., it should always be given carefully in small doses, and always combined with ammonia in the form of carbonate or spirit solution.

ACORNS.—In moderate quantities, and taken with other food, acorns do not appear to act injuriously. Pigs are known to feed largely on them; but in seasons of scarcity, dry summers, &c., cattle, sheep, and horses at pasture obtain unlimited supplies, which form exclusively their food. The effects are produced by virtue of the large amount of tannin they possess directly upon the fibrin of the blood; its fluidity is more or less destroyed, and circulation thereby impeded; and this accounts for the spots of ecchymosis, mortification, sloughing, and even perforation witnessed in many cases that occur not unlike cattle plague. Similar signs also result from consumption of large quantities of the young shoots of oak trees.

The *treatment* consists of brisk cathartics and enemata, opiates, &c., to counteract pain and spasm, and stimulants under depression. The fluidity of the blood is best promoted by the carbonates of the fixed alkalies, which may be

advantageously given with the sesquicarbonate o ammonia. If the removal of epithelium is extensive, the absorption of medicines will be doubtful. The endermic method may then be tried—Strychnine in solution, half to one grain doses, being calculated to produce a reaction of nervous power among cattle. The following solution is commonly used :—

℞ Strychniæ, gr. ij.
Spiritus rect., ℥j.
Acid. sulph. pur., gutt. iv.
M. Fiat solutionem.

One drachm of this solution contains half a grain of strychnia; 30 drops, one fourth; 20 drops, one eighth; and 10 drops, one twelfth.

ACUTE INDIGESTION—Stomach Staggers—in horses and cattle frequently resembles poisoning by narcotics, and may be readily confounded with such when the signs of frenzy, coma, &c., are developed rapidly, or without the observance of premonitory symptoms. Constipation is usually present, and the diarrhœa that succeeds does not partake of fœtor or become profuse; the evacuations are small in quantity, frequently natural in colour and consistence, or only rather more fluid than in common. The affection is observed among animals housed and fed on artificial foods, as frequently as

in pasture. There is no PTYALISM, PROCTORRHŒA, or violent TENESMUS in the early stages, and generally the symptoms are not so rapid as when poisons have been taken. The presence of large quantities of food produces much abdominal irritation, pain, tympanites with resulting cerebral congestion; and particular points of distinction are to be derived from the history of the case or cases, mode of feeding, prevalence of the malady, and whether one or more animals are affected. Poisoning by eating noxious plants produces signs in all alike, and the affection bears close resemblance in each, both as to duration and progress. Acute indigestion may affect only one animal, and days may elapse before another is seized—unless a number have gained access to an unusual kind and quantity of food; whereas the results of improper feeding, &c., are productive of disease which appears with variable intensity, and in most cases watchful eyes may have detected, during previous days, premonitory signs of disturbance. See POISONING.

ÆTHIOPS MINERAL—SULPHURET OF MERCURY—is a black powder insoluble in water and alcohol; volatilizes by heat alone, but reduced to the metallic state when mixed with potash and projected over the spirit flame. Soluble in hydrochloric acid with the evolution of sulphuretted hydrogen. See MERCURIAL POISONING.

ALBUMEN.—The various forms of albumen are eminently serviceable in the treatment of poisoning by the corrosive minerals, acids, &c., forming with the various metallic salts, definite chemical compounds called *albuminates*. Albumen constitutes the greatest portion of the white of eggs, in which form it is the most energetic as an antidote. The other forms are met with in the gluten of wheat, and casein of milk, both of which form very beneficial extempore remedies, although probably not equal to the white of eggs. Wheaten flour, fine oatmeal, ground barley, and the meal of peas and beans may be variously used; being generally within reach, they admit of being hastily mixed with water and promptly administered. Linseed tea is also another form, all of which should be made tolerably thick and administered copiously.

ALBUMINOUS NEPHRITIS. — See Bright's Disease.

ALCOHOL.—The various forms of alcoholic fluids are of great service in veterinary practice. Besides being of themselves stimulant, they prove valuable adjuncts to other remedies, as well as convenient vehicles for their administration. In cattle practice, ale or porter is exhibited with cathartics, aromatics, &c., and most medicines, when they increase the purgative action and expedite the removal of con-

stipation, &c. The stronger forms, as brandy, whisky, and gin, are also frequently employed for the same purpose, but too often without regard to existing conditions. Alcohol, besides being stimulant, exerts a powerful influence on the cerebral system as a narcotic; it is therefore contra-indicated in all its forms in the coma of typhoid diseases, parturient apoplexy, acute indigestion of horses and cattle, &c., &c., ammonia being the reliable substitute. Alcohol and the various ethers promote the action of aloes in the horse, and thus may be turned to a great and beneficial account in the treatment of impacted stomach or general constipation. In cases of emergency, slight cases of colics and pulmonary apoplexy yield to its action. As an external application, it forms the active sanatory ingredient of many so-called "healing lotions," other substances with which it is compounded or held by it in solution having questionable virtues when the true physiology of the animal body is properly appreciated.

ALKALOIDS, Poisoning by.—See Animal Charcoal.

ALTHÆA ROSEA—Common Hollyhock.—This plant, a luxuriant ornament of many gardens and shrubberies, belongs to the family Malvaceæ or Mallows, remarkable for the great supply of

viscid mucilage they yield, with an inert alkaline principle known as *Althein*. Poisonous properties have been ascribed to the hollyhock, in consequence of reported deaths taking place after cattle have largely partaken of it. It is, however, now decided that no toxic principles exist in the plant, and when death results after a hearty meal of it, the causes are to be ascribed to acute indigestion associated with cerebral complications.

AMAUROSIS — sometimes called Gutta-serena.—A condition of the eyes in which dilatation of the pupils takes place conjointly with partial or total blindness. It is referred to as an effect of poisons, &c., that disturb the action of the brain, producing more or less insensibility.

AMMONIA. — See Caustic Alkalies. — The carbonate and sesquicarbonate of ammonia are largely used in medicine. They form the general stimulant in debilitating affections of all domestic animals. The aromatic spirituous solution is equally valuable. When given in too large doses they produce signs of disturbance but slightly inferior to the common alkalies, and when from a want of proper dilution, or imperfect administration of boluses containing the solid form, they are lodged between the molars, anorexia and excoriation, with swelling of the tongue, mouth, and fauces is the consequence.

The animal moves the jaws from pain, and profuse salivation results. A solution of alum should be taken to wash out the mouth, which, after being repeated a few times, frequently removes the disturbance. Ammonia is one of the most useful agents in the pharmacopœia as a diffusible and nervine stimulant, and antispasmodic, &c. When given in the solid form it should always be very finely powdered, and largely diluted when the liquid preparations are selected. The doses are as follows:—

Stimulants, &c.	*Horses & Cattle.*	*Sheep.*	*Dogs, &c.*
Liq. ammon. fort.	ʒss to ʒiv	ʒj to ʒij	♏iij to ♏viij
Spts. ammon. aromat.	ʒss to ʒij	ʒij to ʒss	♏v to ♏xx
Ammon. sesquicarb.	3ij to 3vj	3j to 3ij	gr. v to gr. x
Ammon. murias.	ditto	ditto	ditto
Febrifuge and Sedative.			
Liq. ammon. acet.	ʒij to ʒiv	ʒss to ʒij	ʒj to ʒij

AMMONIO-CHLORIDE OF MERCURY—White Precipitate—is known by the following characters:—Insoluble in water, ether, and alcohol; soluble in strong nitric acid, which yields evidence of the presence of chlorine by giving a white precipitate with a solution of nitrate of silver; volatilized by heat; reduced to the metallic state when heated with dry carbonate of soda; yields an odour of ammonia when heated with

caustic potash, chloride of potassium and the red oxide of mercury being left behind: caustic alkalies do not blacken it. See MERCURIAL POISONING.

ANIMAL CHARCOAL.—Purified animal charcoal possesses a remarkable antidotal power against the vegetable or alkaloidal poisons. It is said to be capable of destroying the toxic effect of aconitine, morphia, and even nux-vomica—strychnia. In poisoning by any of these substances, and while their presence is suspected within the stomach, large quantities of animal charcoal should be rapidly mixed with water and passed by the mouth or injected by the stomach-pump. It is also of great service in poisoning by arsenic, if administered promptly, and assists the operation of other agents employed to arrest diarrhœa and dysentery. Animal charcoal is far superior to vegetable or ordinary charcoal for nearly all purposes.

ANOREXIA — ASITIA — FASTIDIUM CIBI— WANT OF APPETITE — LOATHING OF FOOD.—A condition more commonly observed as a pathognomonic sign of disease, than existing as a definite affection. When there is no other obvious cause than an apparent nervous depression, as seen from hard work, exposure, &c., diffusible stimulants, warm aromatics and vegetable tonics, with antacids,

&c., may be prescribed with care. In all cases it is imperative that the cause should be assiduously sought for and removed; the most common, after local diseases, being irregular teeth or foreign bodies fixed between them, or otherwise inflicting injury to the mouth, tongue, &c.

ANTIDOTES.—See Albumen, Animal Charcoal, Arsenic, Tannic Acid.

ANTIMONY.—Three compounds of this metal are in common use. The *potassio-tartrate*, or *tartar emetic*, the action of which has been denied, enters largely into the composition of the alterative powders of practitioners of the old school. It may be safely classified under the head of "slow poisons," producing death by impoverishment of the blood, marasmus, sometimes congestion of the lungs, hydrothorax, diarrhœa, and collapse. Traces of inflammation are not seen unless the drug has been exhibited in the crystallized form. Carnivorous animals are seized with almost incessant vomiting, diarrhœa, and tenesmus, with violent abnormal pain.

The *terchloride* or *butyr of antimony* is a chemical and corrosive irritant poison; but from its proneness to enter into decomposition with the water of the tissues, the local effects are not so extensive as those caused by the mineral acids. The extent of

surfaces acted upon by it varies with the amount given as a poison, and they are observed to be covered with a dense flocculent substance, which may be scraped off in considerable quantities, exposing beneath blackened surfaces denuded of epithelium. The symptoms resemble those of poisoning by mineral acids.

The *tersulphuret* is one of the three ingredients of the alterative powders of druggists, grooms, and pretenders, and also forms a portion of the "cleansing drinks" of the former. It forms the celebrated "pig powder," and is caused to minister to nearly all the ailments of that animal. Being in such extensive use, there are more reasons for apprehending its obnoxious qualities than are generally admitted, and cases of irritant poisoning now and then come to light. In the autopsy a general blackening results from the fine state of division in which the powder is found, local patches of inflammation occur, and parts of the mucous membrane are corrugated. The amount of ingesta present regulates the extent of abdominal pain and diarrhœa, and in the dog and pig may be observed acute emesis, with a desire to place the abdomen in contact with the ground, and utter, from time to time, tones of a plaintive character.

Tests.—Antimony is largely eliminated by the urine, in which it may be detected. The terchloride being decomposed, will be found in the form of white

oxide in recent cases, and where the quantity administered was large. It is, however, rapidly absorbed, and on this account may be overlooked if death does not take place early. The white flocculent parts or black particles are to be taken, washed carefully, and dissolved in pure hydrochloric acid. A few drops of this solution thrown into water gives a white precipitate—the oxide. A stream of sulphuretted hydrogen driven through the acid solution gives an orange yellow precipitate. The white precipitate is then taken and boiled with equal parts of bitartrate of potash until dissolved; with one of three portions of this solution, sulphuretted hydrogen gives an orange-yellow precipitate, soluble in hydrochloric acid, with the escape of sulphuretted hydrogen gas; to a second part, rendered dilute by distilled water, a few drops of the perchloride of iron produce a copious yellow precipitate; the third part must be concentrated when the same reagent produces a yellow colour only.

Antimony in organic fluids, tissues, urine, &c.—Similar means are adopted as in the case of Arsenic, and detailed under that head; the colour tests of antimony being produced by the method already enumerated, form a special contrast between the two poisons.

Treatment consists of the exhibition of *tannic acid*, mucilaginous drinks, magnesia in milk, opiates, purgatives, derivatives, &c.

ANTISEPTIC TREATMENT OF WOUNDS. —The principle is by no means new, and the use of carbolic acid, as selected by Professor Lister, has not surmounted the whole of the difficulties which are attendant upon lesions of various kinds. Nevertheless there are strong reasons for promoting a much more extended trial than has hitherto been carried out—or at least made known publicly—in veterinary practice. Chlorine water was first made use of by Dr. Hervieux in 1850, in support of his statement that suppuration is not essential to the proper cicatrization of wounds. The result of trials with solutions of chlorine gas in water, and carbolic acid in glycerine or linseed oil, appears to justify such a conclusion. In addition, it has become evident that in many wounds in animals, particularly about the feet, a great source of aggravation is to be found in the dirt and filth of the places, as well as irritating emanations from and result of chemical changes among them. Wounds, even of extensive character, when covered by a rag saturated in these solutions, are protected by a substance that decomposes the irritating agent. Suppuration is thus delayed, and wounds—the matter from which, instead of burrowing and forming troublesome sinuses, &c.—heal up admirably. A convenient mode of preparing the solution of carbolic acid consists of adding equal parts of the acid and glycerine together:—thus half a pound of pure

carbolic acid would require eight ounces of glycerine, which rapidly and effectually dissolves it. One part of this solution is then to be mixed with five or six parts of linseed oil, and is ready for use.

ANUS, IMPERFORATE.—See PROCTATRESIA.

APNŒA.—A condition frequently observed among sheep, in which a difficulty occurs in respiration, as a result of blood-poisoning, brought about by the pernicious use of salves or ointments for the destruction of EPIZOA. The fleece is matted together, and collects dust and dirt; the exhalant powers of the skin are destroyed, or at least arrested, and organic products, which by accumulation become poisonous, induce narcotism, from which parts of the muscular system suffer intensely, particularly those of circulation and respiration.

Symptoms.—First stages, dulness, distress, disinclination to move, anorexia, general constitutional disturbance, mucous membranes injected, prominent eyes, dilated pupils, irregularity of digestive and urinary organs. In later stages, respiration is laboured and difficult, suffocation being apparent, pulse running down, AMAUROSIS, blindness, VERTIGO, COMA, convulsions, evacuation of frothy spume from trachea, death.

Autopsy.—See ASPHYXIA.

Treatment.—Venesection, aconite, derivatives,

&c., during high vascular action; stimulants, with nux-vomica in depression. The fleece should be cleared of the grease, &c., or taken off as soon as possible, and action of skin promoted by friction. If the ointments of mercury or arsenic have been used, absorption may possibly give rise to poisoning by those metals in addition. See MERCURIAL POISONING.

APOPLEXY, CEREBRAL.—As an independent affection, apoplexy is not common among the domestic animals. It usually appears as a concomitant of acute indigestion of horses and cattle, parturition fever of cows, and the presence of tumours within the encephalon. Although in the latter case commonitory signs may have prevailed for some period, yet attracted little or no notice, the practitioner seldom is called until they have arrived at their intensity, when they consist of more or less want of power to control the movements of the limbs, semi-consciousness, amaurotic eyes and generally total blindness, pulse full and of natural frequency. At other times the animal is down, quite insensible, breathing stertorous, pulse exceedingly slow, and becoming small, weak, and imperceptible; animal temperature rapidly declining, total anæsthesia of skin, and death in a few hours.

Treatment is here obviously of no service. If, however, the animal is seen while the pulse is full,

yet slow, and the power of swallowing not destroyed, there are chances of success. Blood should be abstracted without delay, and a strong cathartic exhibited, assisted by enemas. The body should be clothed, and friction applied at intervals. Counter-irritants also to the sides of the neck. As improvement follows these measures the use of derivatives is indicated, and, under anæmic conditions, stimulants, with vegetable tonics, &c. Apoplexy, from whatever cause, is most likely to recur, each attack proving more severe than its predecessor.

APOPLEXY OF PARTURITION.—Extravasation of blood within the cranium of cattle, as a result of *toxæmia* in disease of an anthracoid character.—The practitioner in this affection usually labours under the most adverse conditions. When the comatose state has arrived, not only are the stomach and bowels in a state of plenitude and constipation, but, from the want of nervous power, absorption from the digestive tract is arrested. Medicines can therefore effect no good. The only course open is exhibition of strychnia endermically, cold water, ice, &c., to the head and withers; and to induce purgation—after medicine has been administered—injection of water into the veins has succeeded in some instances. A dilute solution of the aromatic spirits of ammonia or tincture of white hellebore will s

animation, but in most instances treatment at this stage becomes purely experimental, which probably at no distant day may be further developed and accepted in the general principles of treatment. All fluids intended for injection should be dilute, and not in large quantities, a pause being frequently observed of greater or less duration during the administration. The temperature also should not be lower than 99° Fahr., or above 101° or 102° Fahr.

Apoplexy, Pulmonary—See Apnœa and Asphyxia.—Acute congestion of the lungs, and its frequent *sequela*, Pulmonary Apoplexy, are common among horses too heavily pushed and ridden in the hunting field, particularly when the land is heavy or principally under the plough, and the condition of the animal below the requisite standard. The flow of blood through the lungs is greatly retarded, and during stertorous respiration danger from complete suffocation is apparently imminent. The pulse is at first slow and oppressed, but, under no relief, becomes small, rapid, and indistinct; mouth clammy and fœtid. V. M. M. injected and dark-coloured, weakness rapidly increases, and the animal drops dead; general coldness with, probably, perspiration preceding dissolution. Chloric, sulphuric, or nitric ether, and ammonia are required. The first is invaluable during the paroxysms, and the latter admirably succeeds as a nervine stimulant

when the acute signs are passed. If deglutition is difficult or impossible, use the first as an enema, largely diluted; and pass by the endermic syringe a weak solution of ammonia with tinct. nucis vom. within the cellular tissue. When indications of returning power are manifest, continue the stimulants with gentian, ginger, and nux vomica, but watch with care in order to guard against reaction, which may end in pneumonia or hydrothorax. The thermometer, passed at intervals of two or three hours, will readily enable the practitioner to realize the approach of such undesirable conditions. Tracheotomy is of no service in this affection.

ARSENIC.—White arsenic or arsenious acid, and Fowler's solution—arsenite of potash—are the forms used in veterinary medicine for the purposes of an alterative in skin diseases, and tonic properties in broken wind, emphysema of the lungs, &c. The doses of arsenious acid are, for the horse and cattle, 4 gr. to 10 gr.; dog, $\frac{1}{10}$ gr. to $\frac{1}{15}$ gr. The liquor arsenicalis—Fowler's solution—is regulated by the amount of acid contained, four grains being dissolved in every fluid ounce. The use of arsenic may be continued for a long time if combined with iron, or periods of omission are observed. A great quantity doubtless passes off with the food of domestic animals, and irregularity of action may be

observed by the use of the solid form. The solution is far preferable for remedial purposes, thrown upon the food or mixed with the drinking water. When the drug proves obnoxious to the system, such signs as the following are observed :—Œdema of the lips and eyelids, tenderness of the conjunctiva, with increased vascularity and intolerance of light, bowels are irregular, breath fœtid, gums redder than usual, and salivary secretion augmented, pyrexia, capricious appetite, thirst, &c.; and in dogs possessing little hair, the "eczema arsenicale," or "nettle rash," may also be observed.

Arsenical Poisoning.—The absorption of arsenic is frequently rapid, from the extensive and empirical use of ointments into which it enters. Grooms resort to the acid in order to produce a fine coat in the horses under their care. Rat powders, wholly or partially composed of it, are carelessly left about, and malicious persons place it among the food of animals. From these several circumstances poisoning occurs. The vapour from copper smelting works, black sulphur, and the tersulphuret of antimony also act injuriously upon animals from the arsenic contained in them. The vapour of arsenic gives rise to a *chronic* form of poisoning, in which is observed great thirst, loss of appetite, pain and irregularity of bowels, enlargement of joints, MARASMUS, and general depression and sinking. In the *acute* form the signs occur at variable times, the

amount of ingesta greatly interfering with the action of the drug. Those observed are as follows:—Loss of appetite, nausea, salivation, shivering, diarrhœa, tenesmus, abdominal pain (sometimes paralysis), accelerated breathing, rapid pulse, which is also smaller and weaker than natural, all of which gradually become intensified, until collapse and death ensues. Tetanic spasms frequently take place towards the close. Pigs and carnivora exhibit severe emesis and abdominal pain, and utter wailing cries.

Autopsy.—The lungs, sometimes also the heart, liver, spleen, and kidneys are congested; villous coat of the stomach and mucous coat of small intestines inflamed in places with thickening from effusion between the visceral layers, softening, ulceration, and even perforation and disorganization. The urino-genital apparatus is commonly affected, being considerably heightened in colour. N.B.—These effects are as readily produced from absorption by the skin when arsenical solutions or ointments have been freely applied; and the bodies of animals poisoned by arsenic resist decomposition in a remarkable manner.

Treatment.—Promote emesis where possible, or use the stomach-pump. *Fats and oils prevent the solution of arsenic.* Animal charcoal; gelatinous precipitate of magnesia;* hydrated sesquioxide of

* The gelatinous precipitate of magnesia is prepared by mixing a caustic potass solution with that of sulphate of

iron; linseed tea, milk, barley water, soups, broth, &c., all are of value if administered promptly and in large quantities. Subsequently opiates, belladonna, &c., and eliminatives, &c., are required.

Tests.—If solid particles can be obtained let them be carefully separated from all fatty and other organic matters and examined as follows:—1. Arsenic projected on platina foil over the flame of a spirit lamp is entirely volatilized in a white vapour. 2. Heated in a small tube, it sublimes and condenses in the cool part, forming lustrous octahedral crystals. 3. Soluble in hot solutions of carbonate or caustic potash. 4. Mix the suspected powder with an equal part of cyanide of potassium or charcoal; place the compound *dry* at the bottom of a long narrow test-tube, and heat over the spirit flame, when a ring of *metallic arsenic* will be formed in the cool part as a steel grey incrustration. Examine by a powerful lens or microscope. 5. Break the tube, and place the portions containing the grey incrustation within a larger one, and again heat; the metal now volatilizes, recovers its lost oxygen, and condenses as arsenious acid—white lustrous octahedral crystals, which should be examined with those obtained in process 2.

magnesia. The hydrated sesquioxide of iron is made by precipitating it from a solution of a per-salt of the metal by means of liq. ammoniæ. As an antidote of efficacy to arsenic it is, however, doubtful. It should be largely administered in suspension with gruel, and flour and water and other extemporaneous fluids.

If a quantity, say one ounce of the solution as obtained in 3, is at hand, it may be treated as follows:—6. Acidulate by means of hydrochloric acid, and add to one portion solution of sulphide of ammonium; a bright yellow precipitate forms the sulphide of arsenic, or orpiment. 7. Solution of the ammonio-nitrate of silver gives a primrose-yellow precipitate, the arsenite of silver. 8. Solution of the ammonio-sulphate of copper produces a bright green precipitate, the arsenite of copper, known as Scheele's green.

Arsenic in Organic Matters, &c.—9. Obtain fluid from these by filtration, acidulate and test by 6, 7, and 8. If viscid or mixed with fatty matters, dilute with water, boil with muriatic acid, filter, and test as before. 10. *Reinsch's Test.*—Take a portion of the fluid from the stomach, and put in pieces of clean copper sheet, wire, or gauze. If they become coated with a steel grey incrustation, *arsenic or antimony is present*, to determine which proceed as already stated under 4, 5, 3, 6, 7, and 8.

Arsenic is largely eliminated by the kidneys: the urine should therefore be preserved and examined; the tests 6, 7, and 8 may answer; if not, proceed as stated under 9 and 10.

Arsenic in Animal Tissues.—Portions of the liver, lungs, kidneys, intestines, spleen, &c., are to be taken, reduced to very small pieces, and carefully digested with water and pure hydrochloric

acid. As soon as the tissues are decomposed, institute *Reinsch's Test;* another portion of the fluid may be distilled, and treated by the colour tests 6, 7, 8. These are amply sufficient to detect arsenic, but if desirable, Marsh's test, by nascent hydrogen, may be used: a description of which is given in nearly all chemical works.

ARTIFICIAL RESPIRATION.—In most cases of asphyxia that occur among the lower animals, artificial respiration, if applied at an early period, is attended with good results. The hands are spread, so as to cover as much space as possible, and applied with steady pressure, alternately, to the parietes of the abdomen and walls of the thorax. This must be continued with such regularity, that the number of respirations in health may be carefully imitated. In aggravated conditions it may be necessary to open the trachea, when the orifice should be sufficient to admit the nozzle of a common bellows, or that attached to a proper India-rubber bag. Gentle pressure is then continuously applied to the instrument, and air cautiously distributed to the lungs after each compression on the outside of the chest. The desired ends may in some cases be obtained if the instruments are applied to the mouth or nostrils.

ASPHYXIA—Suspended Animation.—Several

forms are observed. See Apnœa. *Asphyxia suffocationis*, arising from strangulation, hanging, drowning, and impediments to respiration, in consequence of diseased conditions of the larynx, trachea, narcotic poisons, &c.; *Asphyxia mephitica*, caused by the inhalation of noxious gases; *Asphyxia neophytorum*, arising from inertia, &c., in newly-born animals; *Asphyxia algida*, resulting from intense cold; and *Asphyxia electrica*, or stroke of lightning.

Autopsy.—The general signs of asphyxia in the dead body are: Fluidity of the blood, which is also very dark in colour throughout the arterial as well as venous system; extensive congestion of the brain and various organs of the body, particularly of the lungs, with an overcharged state of the right ventricle. Other local signs are also present, which go far to distinguish some of the forms of asphyxia. For instance, hair is singed sometimes extensively from the effects of lightning; swelling of the head and neck, with numerous bruises, occur after hanging; or extreme tumefaction at the throat may be present; frost-bites after the effects of cold, &c.

Treatment.—Remove the cause as speedily as possible, restore the circulation by artificial respiration and friction to the surface, cold water dashed into the face, inhalation of ammonia. Newly-born animals should be alternately but rapidly plunged first into a cold bath 50° to 60° Fahr., and next

into a warm one of 98° to 102° Fahr. These failing, proceed as detailed above. Frost-bites should not be warmed too rapidly. Friction with sea or salt water, snow, &c., should be used, with subsequent dry friction and moderate clothing. Enemas, stimulants, cathartics, derivatives, &c. &c., will be required afterwards in accordance with conditions; but bloodletting must be strictly avoided.

ATROPIA, or ATROPINE.—The alkaloid upon which the activity of belladonna depends. On account of its extreme power, the greatest caution is necessary during its employment. The dose for the horse, gr. j to gr. ij; to the dog, gr. $\frac{1}{10}$. A solution for application to the eye in order to produce dilatation of the pupillary opening contains from 2 to 4 grains to the ounce. One drop placed within the palpebræ produces the desired effect in a very short time. An ointment is also prepared, containing one grain to the ounce of lard. This is applied round the orbit with smart friction.

BARYTA.—The salts of barium are poisonous, and are used as an ingredient of rat-powders. The carbonate of baryta does not appear to be so powerful as the chloride. The signs of poisoning are ANOREXIA, uneasiness, accelerated pulse and respiration, which in a few hours assume an aggravated character, as violent abdominal pain, diar-

rhœa, Dyspnœa of a painful nature, profuse perspiration, is death. The action of the salts of barium is, however, somewhat uncertain. It appears that a large quantity in the solid form may be taken daily in small doses without disturbance, being probably largely carried out of the system by the food. In other instances, when given in solution or continued for a long time, death has occurred suddenly, leaving no appearances of irritation whatever. As usual, from the solid form, there are signs of gastro-enteritis, but the most likely cause of death is an effect upon the nervous system by which circulation is arrested.

BELLADONNA.—All parts of the plant known as the Deadly Nightshade or common Dwale—*Atropa belladonna*—are highly poisonous to domestic animals when taken in tolerable quantity. The effects are those of a narcotico-irritant poison, in which a wild excitement or delirium, with dilated pupils, vertigo, convulsions, stupor, and lowering of animal temperature are remarkable. Carnivora are very susceptible of the action of belladonna. In poisoning by it, stimulants, as coffee or tea in which is placed ammonia, brandy, tr. opium, strychnine, &c. &c. In cattle the rumen may require to be unloaded mechanically. Purgatives, eliminatives, &c., subsequently. Large quantities of the solution of atropine or extract, used externally, will produce

all the effects of poisoning equally with their internal use.

BINIODIDE OF MERCURY.—Has a bright scarlet colour; almost insoluble in water; freely soluble in ether or an aqueous solution of iodide of potassium, but sparingly soluble in alcohol; assumes a yellow colour when heated on paper over a spirit flame, and a reddish-brown when digested in a solution of soda; the clear fluid from the latter yields a blue precipitate when mixed with a solution of starch and acidulated with nitric acid. See Mercurial Poisoning.

BINOXALATE OF POTASH.—See Mangold Wurzel, Oxalic Acid.

BISMUTH.—The tri-nitrate or subnitrate of bismuth is used as a sedative to the stomach in acute dyspepsia and irritation of the mucous membrane. It is a very insoluble salt, and does not appear to be dangerous, except in very large doses or in the crystallized form, when all the signs of irritant poisoning are produced, with vertigo, staggering gait, tremors, &c.—*No antidote.* Mucilaginous and albuminous drinks are necessary in the treatment with emetics in the dog; after which purgatives and eliminatives. Bismuth is known by its solubility in nitric acid, a few drops of which

thrown upon distilled water gives a white precipitate insoluble in tartaric acid. The basic nitrate of bismuth is a powerful disinfectant to unhealthy and sloughing wounds, and promotes healing. It is highly valuable in scrofulous sores.

BITES.—Wounds caused by the teeth of animals partake of several characters. The parts are more or less bruised as well as being lacerated, and probably the entrance of saliva may add to the local disturbance, although possessing no direct poisonous quality. The bites of rabid animals are, however, dangerous, and should receive the earliest possible attention. From the causes above-named, bites are very prone to assume a gangrenous or unhealthy character. Treatment should consist of the immediate application of the actual cautery to the wound, nitrate of silver, caustic-potash, the mineral acids, butyr of antimony, &c. The fluid escharotics are preferable to the solid caustics, as they pervade all parts of the wound, while the action of the latter is limited. The actual cautery may consist of the common budding iron, or a piece of thick iron or copper wire. See Scratches.

BLADDER, Distension of.—Signs of uneasiness and distress, with straggling gait, accelerated respiration and circulation, pain in turning, frequent but ineffectual attempts to urinate, accompany

acute distension of the bladder. The condition of the viscus should be ascertained *per rectum*, and the catheter passed as soon as possible. See Catheter. In male animals some difficulty attends this, but the operation is easy in the female. The contents being evacuated, warm enemas should be thrown up, and a brisk cathartic administered. Bleeding is sometimes resorted to, in order to counteract muscular spasm; chloroform may also be administered; belladonna internally by the mouth, and conjointly with sulphuric ether as injection.

BLADDER, Rupture of.—After an animal has endured the prolonged torture that ensues from an over-distended bladder and rupture takes place, an apparent cessation of symptoms is frequently observed. If the hand be passed up the rectum the viscus cannot be detected. No natural discharge of urine takes place, the pulse becomes feeble and small. The catheter admits of the passage of blood; an anxious countenance appears, the appetite is capricious or altogether lost, and the animal continues to stand persistently. The signs may continue a day or two without much alteration, and at length the pulse becomes slow, there is a tendency to lethargy and œdema of the legs and dependent parts, while an urinous odour is exhaled from the skin. Coma now rapidly advances, the

limbs refuse their power of support, the animal staggers, is blind, and falls awkwardly; a state of dissolution is imminent, and death follows.

Autopsy.—The bladder is probably gangrenous, and contains a rent of greater or less dimensions; the intestines are inflamed, and layers of membranes are raised by infiltration; a large quantity of urine is found in the abdominal cavity, and all the tissues of the body possess a nauseous odour of urine, the muscular system being dark coloured and flabby; the blood is also dark coloured and fluid; lungs and brain congested.

BLEACHING POWDER. — See Chlorine. Lime.

BLEEDING.—See Venesection.

BLUE VITRIOL.—See Copper.

BOWELS, Injuries of.—The intestines are sometimes included in damage inflicted by sharp instruments, &c., upon the parietes of the intestines. When the wound is small, a single stitch may be inserted, the ends tied and cut off close; if large, the uninterrupted suture—silk being used—will answer the best. Care must be exercised in order to draw accurately together the peritoneal surfaces; the stitches also should be regular and near

each other. All extraneous substances are then to be carefully removed, and the bowel returned, when, if the case progresses satisfactorily, the sutures will be evacuated through the intestines. Wounds in the floor of the abdomen should be supported by means of a roller, in addition to the usual surgical treatment, in order to prevent the reappearance of the bowel.

BRIGHT'S DISEASE—Albuminous Nephritis. — A common disease among horses fed and worked irregularly, particularly when the food is variable in its nutritious properties and mode of preparation. The signs manifested are those of abdominal irritation, dysuria or strangury, with rapid toxæmia, paralysis, coma, and death in some cases within 24 hours. It commonly arises when highly nutritious food is supplied in large quantities during absolute rest, after the animal has been badly cared for and irregularly worked. If urine can be obtained, it resembles boiled linseed oil, from its admixture with blood materials. The bladder should be evacuated as soon as possible, as from this operation great relief is derived; to this should succeed a brisk aloëtic cathartic. Diuretics must be avoided while the kidneys are in such a state of disturbance.

BROMINE.—The effects of this substance, and

also those of its salts, as poisons and remedial agents, are analogous to those of Iodine—which

BRINE.—See Chloride of Sodium.

BRUISES.—See Contusions.

BURNS AND SCALDS.—Accidents, during which severe burns and scalds are inflicted upon the lower animals, are not unfrequent. Horses employed about blast furnaces and iron foundries suffer from the explosion of slag-balls, &c., and are sometimes thrown upon red-hot metal; others are seriously damaged in chemical works by hot and even caustic fluids. Besides, burns and scalds arise in consequence of malicious feeling entertained towards stray dogs and cats, &c., hot water being thrown over them, or probably rubbed with turpentine or other inflammable liquid, which is afterwards ignited. In this way the greatest torture is inflicted. Various modes of treatment are propounded, the most common being to apply a mixture of rape oil and solution of the acetate of lead by means of a feather, and afterwards envelope the parts in cotton wool saturated in the same mixture. A proportion of turpentine added to it also answers well, or cotton wool saturated in the warm spirit alone, followed by a thick coating composed of oil of turpentine two

parts, and lead liniment, or zinc ointment, four parts. The primary irritation instituted by such a dressing quickly subsides, and is succeeded by an agreeable soothing sensation. Unless a profuse discharge or fœtor arises, the covering is to remain several days, when a healthy granulating surface is exposed. Such a mode, however, is not applicable to all kinds of burns and scalds met with in veterinary practice, as coverings cannot always be applied, and, even where they can, the uneasiness of the animal ensures their speedy displacement. A thick mixture of lead liniment and turpentine is laid on, and flour afterwards repeatedly thrown from a common dredger. This provides a coating which effectually protects the surfaces from the action of the atmosphere. The famed "Carron oil"—so called because it was first used by the *employés* of Carron Works, near Falkirk—composed of lime water and linseed oil, is also a very good remedy. Wheaten flour is sometimes used alone, and answers well after the part has been covered with common treacle. Finely scraped or powdered chalk, calcined magnesia, carbonate of soda in powder and solution, also suggest themselves in an emergency. The latter, as also solution of citric acid, is remarkable for allaying pain. A solution of carbolic acid is highly valuable. It is made thus:—One part, by weight, of the crystallized acid is dissolved in one part, by measure, of pure glycerine. Such

a solution should always be kept ready in the pharmacy, as it is eminently useful for many purposes. One ounce by measure of the mixture is then added to five ounces of linseed oil and well shaken; to this half an ounce of tinct. opii is added, and the whole caused to make eight ounces by a solution of carbonate of soda (one part to eight of water). The wounds are covered by the mixture and afterwards dredged with flour. If fœtor arises under other treatment, the carbolic acid mixture or solutions of chlorine, chloride of zinc, &c., should be used. Constitutional symptoms sometimes require the practitioner's greatest vigilance. During exacerbations of irritability, aconite, belladonna, acetate of ammonia, &c., are required; and under depression of the vital powers, resort must be had to diffusible stimulants, as ammonia, ether, and alcoholic fluids that may be at hand.

In all cases of extensive burns and scalds, the main object should be to provide and maintain an equally impervious covering, as a protection from the atmosphere; and in removing it to ascertain the progress or condition of the parts beneath; only a little should be exposed at a time. When glutinous materials are used, and discharge breaks out at various parts, dry powder should be immediately thrown on. When blisters form, do not cut or puncture them; the skin and tissues beneath obtain

a better protection when they are whole, and there is less pain.

When caustic agents have been the cause of injury, relief may be afforded by weakening or neutralizing their effects; thus:—Mineral acids may be treated by washing the affected parts with solutions of the alkaline carbonates; caustic alkalies should be neutralized by vinegar, dilute acetic acid, &c. See Lime.

CALOMEL—Chloride of Mercury—is found as a white or grey insoluble powder; volatilized by heat; blackened by caustic alkalies, carbonate of ammonia, &c.; reduced to the metallic condition when heated with dry carbonate of soda. Calomel is irritant in large doses, but produces death by long-continued medicinal doses in the chronic form. See Mercurial Poisoning.

CAMPHOR is a narcotico-irritant poison when given in large doses. It has seldom been known to produce absolute poisoning in veterinary practice. From its general use as an ingredient of sedative balls, it is apt to produce great irritation of the gastric mucous membrane, when sufficient care has not been exercised in pulverizing it. The various ethereal spirits and essential oils are powerful solvents; a few drops of these assist in its reduction in the mortar very materially. Camphor admirably

covers the odour of turpentine, and assists the mingling of fluids with each other that are not otherwise miscible.*

CANTHARIDES.—When these insects are used in the form of ointment externally or powder internally, great care should be exercised in order to avoid their effects upon the urino-genital organs. Whenever irritation exists or injuries are committed upon or near those parts, cantharides as a vesicant should be abandoned for mustard or the *Mylabris Cichorii*, as recommended by Mr. B. Cartledge of Sheffield,* and Mr. T. Hurford,† India. In poisoning by cantharides, the signs vary in accordance with the mode of administration If given in solution, the mouth and fauces will exhibit signs of irritation and tumefaction, and abdominal pain will be present, with nausea and emesis in carnivora, &c. When given in the solid form, the local signs of irritation are absent, and the most prominent are those of constitutional disturbance, gastro-enteritis, diuresis, but usually strangury is present, and threatening rupture of the bladder from over-distension; at other times the urine is hot, and voided with extreme pain and difficulty, and loaded with albumen. The bowels are constipated, and fæces glazed with mucus. These signs give way to

* "Veterinarian," vol. xxviii., 1855, p. 64.

† Morton's "Veterinary Pharmacy," sixth edition, p. 234.

great depression and agony, tetanic spasms, paralysis, stupor, death. When too large, but not poisonous doses are administered, the effects are localized, as described, in the urino-genital organs. In affording relief, oil, as a solvent of cantharidine, should be avoided. Mucilage should be given with calmatives during the existence of pain, and the bladder evacuated as speedily as possible. See CATHETER, BLADDER, BRIGHT'S DISEASE. Aloes (or saline purgatives in cattle) should follow, and the food should be simple and of easy digestion.

CARBONIC ACID gas is irrespirable, and produces death by APOPLEXY. It is a product of respiration, combustion, and fermentation; is largely given off in the burning of limestone, and an extensive product of the explosion of fire-damp in coal-mines. As a heavy gas it pervades deep wells, cellars, and other excavations that are not properly ventilated, and on this account probably, in many instances, death has taken place in animals falling into them, rather than the result of direct injury. In the burning of charcoal and coke in the stables or apartments without a proper supply of atmospheric air, the resulting carbonic acid gas is rendered more deadly by its admixture with carbonic oxide. The chances of success in the restoration of animals suffering from the poisonous effects of carbonic acid, are

rendered very doubtful in nearly every instance, by the lateness of the period at which assistance can be rendered. It is not always possible to reach the animal without danger to human life; and this applies strongly to the disasters that attend colliery explosions, or when animals fall into deep wells or cellars containing the gas. If, however, there are grounds for hope, the treatment should consist of ARTIFICIAL RESPIRATION carried on persistently; inhalation of ammonia, when the head is raised above the level of the body; cold water dashed over the face; injections containing ammonia; derivatives to the legs and hind quarters; galvanism directed along the phrenic nerve towards the diaphragm; strychnine endermically. As soon as the patient can swallow, stimulants, as ammonia, should be given in small and repeated quantities, the body clothed, and the animal removed to a cool, well-ventilated building. The bowels should be excited, and elimination of the poison promoted by rousing the skin and lungs to action by exercise, if possible, or friction externally, warm clothing, the Roman bath, diuresis, &c.

If it should be necessary for the practitioner to enter a confined place having an atmosphere containing a large amount of carbonic acid, a towel or handkerchief should be worn over the mouth, which has been saturated with pure water, or weak solution of potash, soda, or lime. Such a contrivance, how-

over, is insufficient for any great length of time, and requires frequent renewal.

CATHETER, PASSING THE.—This is an essential operation, and should always be passed immediately a paralytic patient is visited, when urine has not been discharged, more particularly if the animal has been down some time. Cows that drop at the time of calving are frequently unable to urinate from mechanical pressure upon the bladder; the use of strong diuretic medicines, absorption of cantharides from the skin or given in too large doses, &c. &c., produce spasm of the neck of the bladder, and thus restrict the discharge of urine, and rupture of the bladder may be threatened. Such cases call peremptorily for the use of the catheter. In the female a metallic tube about 15 inches long is used, having a slight curve, and a diameter of $\frac{5}{16}$ of an inch. This is employed as follows:—The index finger of the left hand is used as a director, being passed along the floor of the vagina until it reaches the operculated entrance to the bladder. The catheter is now passed beneath the finger, the hollow of the curve being towards the floor of the vagina. The valve is easily raised, the tube enters readily; a gurgling sound ensues, and urine flows. The bladder of the female of horses and cattle may be evacuated by means of the fingers only, or a small india-rubber tube. It is most readily accom-

olished in cows, the orifice leading to the bladder being large.

In male animals, greater difficulty exists, from the length of the urethra. A flexible tube is used about 4 feet long, the end of which, like the female catheter, is blunt, and rounded off, the exit holes being pierced in the sides. Before it can be passed, the penis must be withdrawn, which is sometimes a matter of difficulty from the muscular power exerted by the animal. The operator stations himself upon the right side of his patient, the fore-foot and head being properly secured by assistants, and the right hand steadily passed up the sheath. When the end of the penis is seized a steady hold should be maintained, while an assistant rubs the perineum in a downward direction over the arch of the ischium. The operator may do this himself in quiet animals. The effect of the operation is to cause the penis to descend slowly, when it may be seized externally by the left hand, covered by a thin soft cloth, which will render the hold more secure. At this stage the condition of the sulci at the end of the urethral canal should be examined. If they contain any accumulations of mucus, dirt, &c., they must be cleared before the catheter is passed. About a foot of the tube is lubricated with oil or lard, and held above by the right hand, the end being passed within the orifice of the urethra, and upwards as far as the part has been greased.

A second and then a third portion is lubricated and passed, and so on until the instrument reaches the bladder; the object of this proceeding being to maintain a firmer hold of the tube than can be done when the hand grasps a greased portion. When the point of the tube reaches the arch of the ischium, an assistant, or the operator with his left hand, may direct the tube round the curve into the bladder. This is frequently the most difficult part of the operation, and not always practicable—particularly in strangury. The pain that ensues excites the animal to violence, and he will probably permit no farther interference. In other cases, even without this condition, the tube cannot be passed; when, if the symptoms are not urgent, injections of opium or belladonna should be thrown up the rectum, and a full dose of the latter exhibited internally. Relaxation usually follows, and the bladder is evacuated naturally. Sometimes this also fails, when an opening is required in the urethra opposite the ischial arch, in order to pass the female catheter. For this purpose the male catheter is again passed as far as the point named, and there held by an assistant. The operator then takes a clean sharp scalpel, and, steadying the catheter in the canal with the left hand, makes a vertical incision through the skin, about three-quarters of an inch in length. The index finger is to act as a means of exploring, in advance of the

knife, in order to avoid important vessels. Dissection is thus performed in successive stages until the urethra is reached, which is known by its white appearance in contrast to other tissues. An opening of three-eighths of an inch, which is ample, is then made into the canal and the flexible catheter is withdrawn, the *female tube* being carefully inserted through the artificial opening, and onwards through the contracted neck into the bladder itself. Discharge of urine sometimes occurs naturally, as well as by means of the catheter, the passage of the tube causing relaxation of the muscular fibres at once. If such a condition is not evident, the wound must be left open until natural urination takes place, when the twisted suture may be used to effect a closure.

In oxen the double curve of the urethra renders the passing of the catheter at once impossible. When the case is urgent the urethra must be opened as described for the horse. In the dog the small bougie as used in the human subject must be selected, and passed as in the horse, with but slight modification in detail.

CAUSTIC ALKALIES.—Potash, soda, and ammonia are included in this category. Poisoning sometimes occurs from their being administered in too large doses as remedial agents, and without proper dilution. Strong caustic solutions are some-

times greedily swallowed during extreme thirst. Cases of malicious poisoning by them are not common. Each produces signs not unlike those that result from the action of the mineral acids, excepting there are no stains; the structures are intensely red, swollen, and glairy to the touch, while hæmorrhage is frequently greater. An autopsy discloses softened membranes, erosions with detached portions, perforations, patches of inflammation, extravasation, and altered blood materials in stomach, small intestines, and even urinary organs. The blood is fluid, and usually natural in colour throughout the vessels, and in this respect the alkalies differ from acids in their effects upon the circulating fluid. Ammonia produces special signs of poisoning, as copious salivation, tetanic convulsions, opisthotonos, paraplegia, and death. Treatment consists in the exhibition of oil, milk, or mucilaginous draughts containing mild acids, as the acetic, citric, or tartaric. Administer opiates, sedatives, &c., during high febrile action, and promote the elimination of the poisons by the Roman bath, and exhibition of bland fluids, &c.

Tests.—Potash and soda may be detected in the urine, where they exist as the carbonate. Clear solutions of each, and also ammonia obtained from the stomach, give a brown precipitate with nitrate of silver; excess of ammonia redissolves it, but potash and soda do not. Solutions of potash and

ammonia give a canary-yellow precipitate with the bichloride of platinum. Potash only, after continued agitation, gives a white granular precipitate with a strong solution of tartaric acid; and soda only under similar conditions gives a white precipitate with the antimoniate of potash. The salts of ammonia are volatile, and are therefore driven off by increased temperature on evaporation; solutions of potash yield slender fluid prisms, while salts of soda form flat scales or rhombic plates. Heated with alcohol in a platina crucible, potash gives a lilac tint to the flame, and soda a bright yellow. Ammonia may be further distinguished by its odour, if caustic soda, potash, or lime be added to a portion of the ingesta, and by the azure-blue colour which it gives to solutions of the salts of copper. Each of these alkalies may be obtained from the tissues by digestion with hydrochloric acid.

Caustic alkalies ought never to be prescribed in mixtures containing vegetable extracts, as decomposition ensues.

CHARCOAL.—See Animal Charcoal.

CHEST.—See Thorax.

CHLORIDE OF SODIUM—Common Salt.—Overdoses of this salt are sometimes given as pur-

gatives to cattle. Pigs withstand its effects very badly, and frequent cases of poisoning occur in them by large admixtures of brine with their food. In them the following signs occur:—Anorexia, thirst, depression, emesis, tympanites, nausea, salivation forming thick foam at the mouth, champing of the jaws, wildness, loud cries, abdominal pain, diarrhœa and tenesmus, vertigo, amaurosis, convulsions, and death in six to twelve hours, or later when the quantity taken is not so large. The signs in cattle are almost identical.

Treatment. — Draughts containing mucilage, enemata of linseed-tea, &c., opiates, calmatives, when the condition of the brain will admit, or cold affusions. Oils are also beneficial; cold acidulated drinks, &c.

Tests.—Chloride of sodium is known by the peculiar cube-shaped crystals its solutions yield when evaporated; insolubility in alcohol; soluble in water, giving a white precipitate with nitrate of silver; and evolving acid vapours when mixed and heated with sulphuric acid, which become dense and white when brought into contact with the vapour of ammonia.

CHLORINE.—Solutions of this gas in water, or as the compound chloride of lime, produce severe symptoms of irritant poisoning, when given in too large doses. The antidote is albumen,

which may be conveniently represented by large quantities of milk, or flour and water, if the white of eggs cannot be obtained. A special sign of the action of chlorine is the violent coughing which it gives rise to. It is questionable if the administration of chloride of lime or solutions of chlorine effect the alleged decomposition of sulphuretted hydrogen within the stomach. A careful inquiry appears to negative such a theory.

The curative effects of chlorine are detailed under Antiseptic Treatment of Wounds.

CHLOROFORM, Inhalation of.—The safe exhibition of chloroform to the lower animals consists in allowing an equal proportion of atmospheric air with the vapour of the anæsthetic. If this is denied in the process, death ensues either from paralysis of the heart, coma or apoplexy, or closure of the glottis by muscular spasm. The *autopsy* shows acute congestion of the lungs, brain, and of the vessels of the head, neck, and chest, the right ventricle being full of dark uncoagulated blood, as in true asphyxia. A convenient and inexpensive mode of exhibiting chloroform to the horse or dog consists in holding a sponge saturated with the fluid to one of the nostrils, when the animal is cast and secured on the ground; a light cloth is then thrown loosely over the nose and hands of the operator, leaving a free communication with

atmosphere around. After a state of unconsciousness is produced, the operation is to be proceeded with as dexterously as possible, during which the assistant, who undertakes the administration of the anæsthetic, should withdraw the application, or apply it from time to time, to keep up the required insensibility. This department should form the whole duty of one person, who must also carefully watch the pulse and respiration. If the breathing becomes feeble, particularly the inspirations, or stertorous, or there are the premonitory signs of suffocation, choking, &c., the inhalation must be quickly discontinued. The mouth should be opened, tongue dragged forward, and pressure promptly exerted on the abdomen, in order to clear the lungs of the vapour. If this fails to reproduce more forcible breathing, recourse must be had immediately to ARTIFICIAL RESPIRATION. If the pulse falters, becomes weak, and syncope is threatened, artificial respiration or galvanism, and in small animals acupuncture of the heart, must be performed. Additional aids are to be found in flagellation of the body, thorax, &c., inhalation of ammonia, use of the stomach pump for the exhibition of stimulants, as coffee, tea, ammonia, &c. STRYCHNIA may be exhibited endermically.

CHOKING.—The nature and position of the obstruction should be carefully ascertained, when, if it

is within the pharynx, it may be withdrawn by the hand. Accumulations of hay, chaff and corn, bran, &c., within the cervical portion of the œsophagus, may be caused to descend by careful manipulation, or rubbing downwards, assisted by the use of oil and sulphuric ether; even harder substances will pass by these means. If failure results, or the obstruction is within the thoracic portion, the probang must be used without delay. In cattle dangerous tympany of the rumen frequently arises in consequence of choking, which necessitates special and prompt remedies. See Hoven, Probang. The signs of choking frequently continue, but in a milder form, long after relief is obtained. They, however, gradually subside, and particularly after the exhibition of draughts containing belladonna, sulphuric or chloric ether, &c.

CINNABAR.—See Vermilion.

COAL GAS.—When the taps of gas-brackets in stables have been incautiously turned on, or playful animals twist them round after being left for the night in close stables, death has been known to occur from narcotism. The constituents of coal-gas are light carburetted hydrogen, olefiant gas, with uncertain proportions of carbonic oxide, hydrogen and nitrogen, and sometimes sulphuretted hydrogen, sulphurous acid, &c.

Treatment is required as for Asphyxia—*Asphyxia mephitica.* See Carbonic Acid Gas.

COLCHICUM.—The symptoms of poisoning by this plant are as follow:—Small, frequent, and feeble pulse, cold perspiration, accelerated and laboured breathing, depression, tympanites, violent abdominal pain, grinding of the teeth in cattle, cold extremities, thirst, staring eyes, amaurosis, fœtid diarrhœa, sometimes paralysis, and coma—and death within twenty-four hours.

Treatment.—In recent cases clear the stomach, &c., by brisk cathartics, enemata, &c., and support by stimulants. If, however, absorption of the poison has taken place, strong decoctions of oak bark, catechu, opium, tannin, &c., must be given with thick flour gruel. Powerful diffusible stimulants should follow, and tonics to restore lost nervous power when acute signs are passed.

COLIC.—See Gut-Tie, Hernia, Invagination. —The cause of colic in geldings and even entire horses may arise from a strangulated inguinal hernia, and more rarely, as well as in mares, from those of a ventral kind. A searching investigation, in order to prove the non-existence of such states, should always precede the adoption of therapeutic means. The most efficient medicinal agents in pure colic are ammonia (largely diluted) in full

doses; chloroform; chloric, sulphuric, and nitric ether; their effects being estimated as in the order placed. Spasm, which accompanies all forms of colic, being allayed, the contents of stomach and intestines should be moved by laxatives. No elevation of temperature or increase of circulation takes place in pure colic, except during the paroxysms. When such signs are added to the usual pathognomonics, and are persistent, fatal termination may be expected. In acute tympany use the sulphites of soda (see HOVEN), or proceed as stated under PARACENTESIS ABDOMINIS. Ammonia is likely to prove highly and rapidly curative when given with the soda compound, with which no chemical action takes place outside the body. By some practitioners the endermic method of exhibiting antispasmodics in colic has been adopted. There is, however, little if any advantage to be gained, as in all curable cases medicines act as speedily when given by the mouth. The proceeding may serve to mystify the course of treatment in non-professional persons' minds, but does not do away with the necessity for removing irritant matters by remedies administered in the ordinary way.

COLD.—Under ordinary circumstances, when food and exercise are regularly taken, animals can endure a great amount of cold. But if these fall short, and cold is long continued, the system fails in

reaction, and the animal succumbs. Death arises by a process of Asphyxia — *Asphyxia algida*, which see. See also Starvation.

COLD WOUNDS.—See Bruised and Contused Wounds, of which kind the cold wound is an aggravated form.

COMA is observed as an effect of the arrest of digestion and flow of blood from the head; blood diseases (*toxæmia*), narcotic poisons, concussion or compression of the brain, presence of cerebral tumours, hydatids, &c. It may also be caused by an apoplectic extravasation of blood within the cranium. The chief signs are blindness, loss of power, and unconsciousness, stertorous breathing, slow and laboured pulse, with relaxation of sphincter muscles, retention of urine, &c.

The *treatment*, which varies with the cause, will be found in the details furnished upon the affections in which the condition is usually exhibited. See Apoplexy or Parturition, &c.

COMMON SALT.—See Chloride of Sodium.

COMPRESSION OF THE BRAIN is denoted by the analogous signs of apoplexy. The causes are depression or fracture of bones of the cranium, as a result of falls, blows, &c. Bleeding from the

ears is symptomatic of fracture of the petrous temporal, or its separation from the squamous portion. Search should be made for the depression or fracture, which is usually characterized by an œdematous state of the soft coverings. The use of the trephine may be required to remove those portions of bone or extravasated blood which induce pressure. The general treatment is as for apoplexy. Success, however, seldom ensues in the lower animals.

CONIUM — Hemlock. — A powerful narcotic member of the Umbelliferæ family. The extract is generally used in veterinary practice, being given to horses and cattle in doses of ʒss to ʒij; dogs, grs. ij to grs. v. *Conia* is the alkaloid, and is obtained in the fluid form, uncrystallizable, and almost as powerful as anhydrous prussic acid. Death is produced by asphyxia, coma, and paralysis. Conium is most powerful and deadly in carnivora. Treatment consists of stimulants, flagellation, Artificial respiration, purgatives, eliminatives, &c. See Coma, Apoplexy, Asphyxia, &c.

CONTUSIONS are very common among the lower animals, particularly horses, from falls, blows, &c. In all cases a bruise or contusion may be viewed as more or less destruction of vitality in the part. In accordance, therefore, with the amount of obstruction to the circulation at the point of injury,

will depend the extent to which death and sloughing take place. Slight cases will require a simple stimulant, as spirit and water, dilute tincture of arnica, soap-liniment, gentle friction with solution of soap, camphorated spirit, &c. In more severe cases, constitutional symptoms will also demand attention, and the extent of inflammation around the part, if not controlled, may result in the production of greater sloughing by separating it from nutrition. Systemic remedies must be prompt and efficient, and consist of aconite, or venesection if required. Evaporating lotions, ice, &c. should be applied to the part, and all stimulating food withheld. As soon as the acute symptoms are subdued, and equilibrium of the local circulation restored, probably the best application is the ordinary soap-liniment, with one-eighth of tincture of opium, used with moderate friction. If sloughing is inevitable and extensive, give stimulants and tonics, keep the parts clean, and use nitrate of silver, chlorides of zinc or antimony, or the mineral acids. See Ecchymosis.

COPPER.—All the salts of copper are irritant poisons, possessing the power of corrosive action, and proving dangerous when used externally in large quantities, as well as when given by the stomach. One to two ounces of the sulphate have proved fatal in the horse.

Symptoms.—Blue or green stains, sometimes associated with erosions of the membrane of the mouth and fauces, swelling, and profuse salivation, nausea, cold extremities, diarrhœa, tenesmus, violent abdominal pain, vomiting blue or green matters in the dog, paralysis, stupor, amaurosis, tetanic spasms, and death.

Treatment.—Albuminous fluids, particularly the white of eggs, milk, flour and water, oils, &c. (*avoid ammonia as a stimulant*); calmatives, purgatives, &c.

The Subacetate of Copper—*verdigris*—produces similar effects, with perforation and softening of the tissues.

Tests.—The sulphides of hydrogen and ammonium give black precipitates with solutions of copper; caustic potash a greenish blue, which becomes black when boiled; ammonia, an azure-blue solution, but if the quantity is small, a greenish-blue precipitate is seen; ferrocyanide of potassium produces a reddish-brown precipitate; a bright piece of iron or steel—as a clean knife—placed in the solution is immediately coated with a film of copper. Metallic copper may also be obtained from its solutions by reducing them with carbonate of soda in the blowpipe flame. The ammonia, ferrocyanide of potassium, steel and blowpipe tests are most decisive. See Iron.

COPPERAS.—See Iron.

CORROSIVE SUBLIMATE—Bichloride of Mercury.—When the presence of corrosive sublimate is suspected in a case of poisoning, it may be separated by sulphuric ether, which upon evaporation will yield the characteristic crystals, almost insoluble in cold water; soluble in warm water, hydrochloric acid, pure and dilute, and solutions of sal-ammoniac, common salt, &c. When heated it sublimes and condenses unchanged. In solution it is known as follows:—By giving a scarlet precipitate with the iodide of potassium; white, with liquid ammonia; black, with sulphides of hydrogen or ammonium. The antidote is albumen. Corrosive sublimate is a chemical or corrosive irritant. See Mercurial Poisoning.

COXO-FEMORAL ARTICULATION. — See Haunch.

CREASOTE is a violent irritant and corrosive poison when given internally, producing death by gastro-enteritis with erosions, debility, vertigo, and paralysis. The strong odour of creasote may lead to its detection during life: after death, the whole of the tissues are thoroughly impregnated with it. Mucilages, oil, milk, albumen, &c., should be given, and especially solutions of soft soap in water; diffusible stimulants under depression, friction to the extremities, warmth, &c.

CYANIDE OF POTASSIUM.—See Hydrocyanic Acid.

CYST, Serous.—See Abscess.

DARNEL GRASS—Lolium Temulentum—*Bearded Rye-grass.*—Doubtless much of the mischief that arises after the consumption of the various grasses, by horses, cattle, and sheep, depends upon two causes. First, an improper quantity after long confinement to other varieties of food; and second, irritation caused by the rough bristles or styles with which many are armed. The darnel grass, however, possesses also narcotic as well as irritant properties, the seeds especially being prolific in their soporific powers. The signs of poisoning are abdominal irritation, with occasional diarrhœa and tenesmus, tucked-up appearance at the flanks, anorexia, nausea, ptyalism, irregular respiration, slow and soft pulse, decline of animal heat, vertigo, staggering gait with crossing of legs, amaurosis, listlessness, coma, stertor, and death. These signs are apt to be confounded with the results of Acute indigestion and Nervous apoplexy, which see.

Treatment.—There is no known antidote. Reliance must be placed upon powerful cathartics, stimulants, and the treatment of apoplexy and narcotic poisoning generally.

Autopsy.—Evidences of gastro-enteritis, with

congestion of lungs, ecchymosis of the investing membranes of the viscera of chest and abdomen. The brain and medulla oblongata are also acutely congested, and petechial spots are found beneath the membrane.

DIGITALIS.—This is usually acknowledged to be a cumulative drug. The doses of the powder are, for horses and cattle, grs. xx to ʒiij; dogs, grs. ij to grs. iv. When the tincture is employed the effects are usually more manifest at an early period. Death ensues from gastro-enteric symptoms forcible heart sounds being manifest, with increased circulation and respiration, debility, staring coat, anorexia, V.M.M. injected, nausea, muscular relaxations and twitchings, coma, death. Sometimes urination is profuse, but by no means general. Tannin, and all substances containing it, are antidotes, with which animal charcoal in mucilaginous drinks should be given. Stimulants are needed to support the system, and opiates to alleviate pain; after which purgatives, eliminatives, &c.

DISEASES THAT SIMULATE POISONING.—Among the many diseases that possess points in common with the results of poisons within the system, may be cited the following:—In horses: Gastritis, rupture of the stomach, enteritis, gastro-enteritis, peritonitis, rupture of the diaphragm, colic,

strangulated hernia, invagination, twisted intestine, impaction or obstruction of the stomach and intestines (calculi and stercoral matters, tumours, bones in dogs, &c.), typhoid affections, and blood diseases generally, particularly those having cerebral complications, as well as diarrhœa, dysentery, &c.; apoplexy, epilepsy, vertigo, paralysis, tetanus, diseases of the heart and large blood-vessels. In cattle: many of the above, with diseases of the reticulum, splenic apoplexy, parturient apoplexy, black quarter, blain, acute indigestion. In sheep: Braxy, heaving pains, hydrorachitis, apnœa in lambs, phthisis pulmonalis, verminosis, presence of tape-worm, with those named for cattle. Among pigs: Hog cholera, obstinate constipation, apoplexy, and epilepsy. In dogs and cats: Gastrorrhœa, obstinate constipation, impaction of the œsophagus, and lodgment of foreign bodies between the teeth, &c. See Sudden Death.

DISLOCATIONS. — The displacement of the articular surfaces of bones in the lower animals, commonly known as *luxation*, forms an insignificant department in veterinary practice, compared with their occurrence in the human subject. Absolute dislocation of bones is almost unknown; they are mostly attended with extensive rupture of ligament or muscle, or fracture of bones, by which the recovery without anchylosis, is almost impossible. The only exception occurs with the patella, dislocation of which is signified by the rigid extension

of the limb backwards, extreme flexion of the fetlock joint, inability to advance the limb, while the animal hops on the opposite or sound side. If compelled to exert himself rapidly, as in fright, &c., a sharp sound is heard, caused by the patella slipping into its place, the symptoms before observed are then absent. When, however, slow movement is made, dislocation again takes place, with a return of the characteristic signs. If the front of the stifle joint is examined, a large hollow will be found in the place the patella should occupy, while that bone may be found on the *outside*. If the ligaments are pressed, pain is evident in recent cases. Chronic dislocations are not permanently reducible, the ligaments are stretched, and articular surfaces of the trochlea of the femur worn away. To reduce such a dislocation, the hind foot is drawn forwards by means of a halter, &c., until the limb is parallel with the abdomen. Pressure is then exerted upon the outside of the patella, pushing it inwards. A sharp sound attends its restoration, and ability is given to move the limb with a proper degree of flexion. The animal must be kept in a narrow stall, with the limb in advance of the opposite, and secured by a rope extending from the fetlock to the collar. A smart blister should be placed on the outside in order to limit motion, and the animal must not be allowed to lie down. Dislocation of the patella frequently occurs in alternate limbs in

young and rapidly-growing animals. After the above treatment has been adopted, good food and gentle exercise should be allowed, hilly pastures avoided, as well as uneven and slippery stable floors, pavements, &c. See HAUNCH; ELBOW.

Dislocations of the elbow, forearm, &c., of dogs after reduction are best treated by splints and bandages, or plasters, with the occasional use of smart friction or stimulating liniments.

DYSPHAGIA, DIFFICULTY OF SWALLOWING.—Dysphagia is a frequent sign of sore throat. *Laryngo-pharyngitis*, as a result of inflammation of the fauces. It is present in tetanus, when it depends upon a state of spasm in which the muscles are more or less involved. Injuries to the fauces, as punctures from sharply-pointed sticks used in the administration of boluses, or scratches caused by the hard and acute angles of the boluses themselves; the administration of caustic medicines, as ammonia, potash, soda, mineral acids; irritants, as turpentine, croton oil, &c. &c., without proper dilution or admixture. It is also a result of the administration of poisons that affect the nervous system, causing more or less COMA when it is accompanied with stertorous breathing.

Treatment by astringent and sedative electuaries.

DYSPNŒA, DIFFICULTY IN BREATHING.—See

Apnœa. The condition here referred to, applies to that form of laboured breathing in which the muscles of respiration are under the effects of spasm or paralysis, as is witnessed in Tetanus, after the administration of Strychnine, in cases of rupture of the diaphragm, spasm of the larynx, and Pulmonary Apoplexy. The cause being fully ascertained, treatment is pursued in accordance therewith, and as stated under the various heads. When spasm seizes the larynx, it is not safe to administer medicine by the mouth. Perform Tracheotomy, or in slight cases rely upon enemata and endermic injections passed in the vicinity of the larynx, or course of the recurrent nerve, as stated under Apoplexy (Pulmonary).

ECBOLICS.—Medicines that produce contraction of the uterus and abortion. Many acrid substances have this property, as Savin, Ergot of Rye, and irritants generally. It is owing to this fact that abortion takes place after animals have taken such in poisonous doses. The action, however, is not always certain, even from the exhibition of the medical doses, and in most instances diffusible stimulants answer the desired purposes.

ECCHYMOSIS.—Extravasation of blood material, as a result of the arrest of local circulation, or rupture of capillaries. Ecchymosis is a general

accompaniment of bruises, contusions, and all diseases in which the blood is primarily or secondarily affected, and its circulating power destroyed. The appearances are usually extensive in pure blood diseases—Toxæmia; also in fatal colic, and after death from many narcotic poisons. Death of the part is not uncommon, and perforations result, as in cattle plague, typhus in pigs, and death from acorns, oak tree shoots, tannic acid and preparations largely containing it. The colour of ecchymosis is purple, deep-red, or black, and although this should sufficiently distinguish it from the so-called "patches of inflammation," it is nevertheless frequently confounded with, and mistaken for it. The parts most favourable towards exhibiting the appearance of ecchymosis, are beneath the peritoneum and pleura. The whole surfaces of the stomach, intestines, kidneys, diaphragm, heart, lungs, and costal pleura are frequently studded. The eye, brain, and V. M. membranes are also affected in many diseases, as purpura hæmorrhagica, coryza gangrenosa, &c., and in cattle and sheep the membranous folds of the omasum. The small spots observed here are known as *petechiæ*.

ECTOZOA, EPIZOA.—Parasites that infest the skin of animals, as lice, ticks, acari, &c. &c.

ELBOW.—Fracture of the olecranon or point of

the elbow is denoted by extreme inability to flex the fore limb or draw it backwards—the toe of the foot being dragged along the ground in making the attempt. The resulting contraction of the triceps muscles produces a great hollow above the ulna, which proves a safe diagnostic. See Teres internus. The epiphysis is very likely to become detached from inflammation produced by kicks, blows, &c., in this part in young animals. Disease of, or injury to, the articular surfaces of the joint are manifest in the increased secretion of synovia and distension of its capsule. In dogs and cats the ulna is liable to fracture, and the osseo-fibrous ring, in which the radius rotates, to rupture. There is great deformity, the limb is carried without any attempts to use it, and extreme pain is evinced upon manipulation of the joint. Diagnosis is in accordance with kind and direction of displacement. Fracture of the ulna is known by the want of substance behind; while the detached portion may be felt higher up among the muscles, and the end of the ulna shortened and rough. Flexion of the joint is patent in early cases, and supination and pronation inflict no pain. In rupture of the ring in dogs and cats, the radius is displaced, and movement in any direction is painful. The lateral and radio-ulnar interosseous ligaments also suffer more or less, and in most cases anchylosis follows. No good is gained by treatment in the first form; but if the

bones are replaced in the second, and the limb carefully strapped up, recovery succeeds slight injuries. *Dislocation* occurs in two forms, backwards, and towards the side—outwards or inwards.

In the backward form the ulna is exceedingly long and prominent, the limb held in partial flexion and extension, while the articular condyles of the humerus are plainly felt, before swelling takes place, in the *front* of the joint. In dislocation sideways, the ulna will be found fixed on one of the condyles and away from its natural central position. Pain is intense in both forms, and swelling is apt to obscure the diagnosis. Reduction of the first is accomplished by pushing the olecranon with the thumb, while the humerus is fixed and steady pulling of the carpus insured. In the second variety the ulna must be pushed in the requisite direction by the thumbs, while the radius and main joint are held firmly between the fingers. Rest and bandages are required; febrifuges, laxatives, &c.

ELECTRICITY.—This is probably one of the most neglected branches of veterinary therapeutics. The simple, portable, cheap, and effective magneto-electric machines that may now be obtained, as well as appliances for developing galvano-electricity, especially favour the employment of the electric current in the many cases of coma and paralysis met with among the patients of the veterinarian.

In lead poisoning, torpid liver, defective circulation, paralysis of the bowels, bladder, &c., dyspepsia, and particularly in the various forms of asphyxia, electricity claims an important notice.

EMESIS—Vomition.—The power of ejecting the contents of the stomach in the dog, pig, and even ruminants, frequently proves of great service in certain diseases and in poisoning. When the tendency becomes marked, and the matters assume unusual colours, the case should excite particular attention and care. Vomition is denied the horse, apart from diseased or malformed conditions; therefore, when it occurs, serious results must be looked for. When unaccompanied by constitutional disturbance, lesions of the œsophagus may be the cause; but when it exists with, or at the sudden decline of, severe abdominal pain, tympany, &c., the pulse being small, weak, or imperceptible, rupture of the diaphragm, intestines, or stomach, invagination, strangulated hernia, &c., are mostly found.

EMETICS are valuable remedies in certain diseases, poisoning, &c., of dogs and pigs, the evacuation of the stomach being of paramount importance. Common salt is a favourite remedy, in quantities of a teaspoonful given in tepid water; mustard is another available and active agent.

Besides these, the sulphates of zinc, copper, &c., are made use of; but many medicines prove emetics in the dog, as the action is easily produced in him. The objections to zinc are, that it is uncertain and often produces an astringent and, if incautiously repeated, a poisonous effect. Tartar-emetic is the most prompt and useful in doses of gr. ij to gr. v.; in addition to which it gives rise to an amount of depression that proves highly salutary in states of high fever, &c. The action of emetics, in poisoning, should be promoted by the exhibition of diluents and bland fluids generally; and great care is required in order to avoid the selection of an agent that would enter into chemical combination with the poison already administered. A stimulant, given after the emetic, will sometimes usefully promote its action. The stomach pump will be required if emesis cannot be produced.

EPILEPSY.—This affection is most common in young dogs and pigs. It nevertheless occurs also in other animals and horses, and by most writers has been confounded with VERTIGO or MEGRIMS, *which see*. A fit of epilepsy is characterised by sudden excitement of the animal, staring eyes, V. M. M. injected, and champing of the jaws, with profuse salivation. The muscles of the neck are rigid, head jerked forcibly upwards and on one side, and the body is drawn into various contortions;

breathing is performed with difficulty, fæces and urine are also frequently voided passively; the heart beats violently, and the animal falls unconscious, struggling in violent convulsions and opisthotonos. Dogs and pigs sit on their haunches during the paroxysm, and sometimes are not subjected to the stage of unconsciousness. Each fit does not terminate alike. Sometimes the convulsions during insensibility gradually subside, and the animal falls into a deep sleep; at others, with their suspension, sensibility returns, and the dog on regaining its feet runs away in alarm. The fits of epilepsy are apt to recur; in severe cases they follow each other rapidly, but successively become weaker until the animal dies. In slight cases they not only become weaker, but appear at longer intervals. The length of time occupied by an epileptic seizure is indefinite; sometimes it will last a few seconds, at others ten to twenty minutes, and even longer.

Treatment.—Cold affusions to the face and head; little more than this can be accomplished during an attack. If the seizures follow rapidly, chloroform may be given, or, what is better, belladonna internally. The bromide of potassium should be tried, with stimulants, tonics, &c.

Inhalation of chloroform to a slight extent is good.

EPISTAXIS.—As a rule this affection only

occurs to a very slight extent in the lower animals, and is usually the result of blows, ulceration, &c. Cases are, however, seen in which plethora is the cause. Large doses of turpentine or tannin, internally, are sometimes beneficial. Cold water, ice, &c., applied to the withers; injections of alum, creasote, or perchloride of iron. The animal must not be fed from the ground or nosebag, and a proper allowance, with regular times for feeding, should be observed.

EYE.—From the careless mode in which horses are tied up after a blister has been applied, the animal is sometimes able to rub the parts with the nose, &c., and the ointment finds its way to the eye. Tepid alkaline solutions should be used to remove the irritant, and astringent or sedative lotions subsequently applied. A laxative or sedative may be administered, and the animal should be placed in a well-ventilated but *totally dark stable*, or a shade may be fastened to the head-collar. If symptoms are acute at the outset, strong febrifuges may be required, as aconite and acetate of ammonia, &c. See Lung. Hay seeds, chaff, wheat, and oat flyers, also gain admittance and set up a great amount of irritation. The animal should be secured by twitch, nose tongs, &c. &c., palpebræ everted, and the foreign body removed by the forceps, in the absence of which a silk

handkerchief may answer. Afterwards treat as above.

EYELIDS—Wounds of.—Union in early cases may be effected by the use of very small pins and the twisted suture. Cold or astringent lotions, laxatives, sedatives, are also required in some instances. If the wound has been caused by a bite or blow, and extends above the orbital arch, matter sometimes burrows behind the eye, or beneath the muscles of the face; erysipelas also may arise in consequence. Dependent orifices must be made if possible, scarifications, &c., and the system attended to. Fatal terminations are not uncommon.

In later cases, after the raw edges are dried, union may be attempted after they have been scraped or pared. When this is despaired of, amputate, and use astringent washes.

FAINTING—Syncope.—Among the lower animals fainting generally occurs from loss of blood. See Hæmorrhage, Flooding. The V. M. M. are pale, pupils dilated, limbs flaccid, pulse feeble and small, and respiration irregular, the inspirations being deep. These signs are usually preceded by a full inspiration, vertigo, &c., when the animal suddenly falls. The patient should be compelled to lie, while cold water is dashed on the face and ammonia held to the nostrils. If the point of

hæmorrhage is known and can be reached, remedies must be applied at once. Syncope is a sign of ruptured liver, disease of the heart and large vessels, &c. When hæmorrhage is the cause, stimulants must be scrupulously avoided; if it arise in consequence of debility resulting from disease, stimulants are highly beneficial.

FARCY.—This disease sometimes appears suddenly, and particularly after animals have suffered from disease of a debilitating character, or the effects of long-continued depletive measures, when the system was previously reduced from poor living and exposure. Sudden swelling of the legs, with lesions of the skin, discharging an ichorous matter, corded lymphatics, &c., must be regarded with suspicion, and the greatest care exercised. See GLANDERS.

FAUCES—INJURIES TO.—These are not unfrequent among horses, cattle, and dogs. One cause is to be found in the careless administration of caustic or irritating medicines. See AMMONIA and CAUSTIC ALKALIES. An equally common cause is the use of sharp-pointed sticks and improper instruments for the administration of boluses, and the forcible mode of cramming down masses of solid medicines that are very hard, and the edges angular, from the covering of stiff paper. Great

distress, salivation, dysphagia, and anorexia are the leading signs, with more or less accelerated circulation and respiration. Treatment of such cases consists in the unceasing application of astringent electuaries, as those of alum, catechu, kino, and pulverized galls. If deglutition is impossible, it may be necessary to open the œsophagus, or effect the administration of medicines by the endermic method.

FITS.—See Apoplexy, Epilepsy, and Fainting.

FLOODING.—See Hæmorrhage after Par-

FRACTURES are characterized by an absence of controlling power and natural mobility of the part. Usually also there is more or less hanging or pendulous state of the limb; weight can rarely be supported, and deformity is frequently great. Motion inflicts pain and elicits a grating sound—*crepitus*—which arises from the rubbing together of the ends of broken bones. Swelling from infiltration, extravasation, and emphysema, is evident shortly after the accident, and constitutional disturbance ensues. The pulse is full and hard, breathing accelerated, V. M. M. injected, and extreme agony evinced in attempts to place weight upon

the limb. Some animals bear the effects badly, and succumb from irritative fever and congestion of the lungs.

The greatest difficulties frequently oppose the efforts of the practitioner to reduce the fracture and maintain the bones in a desirable position. The animal becomes weary of standing, is naturally of an excited or irritable disposition, and restraint tends to increase it; to place him in slings may render him furious; these are all opposed to a favourable union. Proximity to a joint may result in anchylosis. There are, however, cases where reduction and union may prove successful, as in transverse fractures of the radius, metacarpal and metatarsal bones of horses and cattle; the radius, ulna, and tibia, as well as bones of the metacarpus and metatarsus of the dog and cat. Various means are employed to maintain apposition, such as packing the hollows with tow and applying splints and bandages. Plaster of Paris has been used successfully, applied in successive portions while the limb is held firmly by an assistant. Bandages saturated in a thick solution of starch are very highly spoken of. Other practitioners envelope the limb in warm sheets of gutta-percha, which are bound by bandages. In dogs and cats, splints are easily formed out of the chip of hat boxes. The limb is first to be secured by a piece of common sticking-plaster, upon which splints are secured by

other strips, the hollows being padded with tow or cotton wool. Starch bandages, gutta-percha, &c., also are very suitable for these animals. See MANY-TAILED BANDAGE. Burgundy pitch-plasters, and glue bandages, are likewise valuable.

GALLS.—From the quantity of tannic acid contained in galls, they form a most useful agent as astringents and styptics in chronic mucous discharges and hæmorrhages. They may be given in the form of powder or as a drench, with mucilage, &c. Tannic acid is an antidote in poisoning with COLCHICUM, WHITE HELLEBORE, and all substances containing VERATRIA; also of essential service in poisoning by the irritants generally.

GALVANISM.—See ELECTRICITY.

GANGRENE.—See MORTIFICATION.

GLANDERS.—This loathsome and dangerous affection is never absent from some establishments, entirely as a result of improper management in every respect. Spontaneous glanders is in a measure chronic in character, but glanders from inoculation runs a speedy course. FARCY is but the same disease in a latent form. The appearance of œdematous legs with oozing ichorous discharges as high as the knees and hocks, white ragged ulcers over

the body, disclosed by the use of the brush or comb, knotty state of the submaxillary glands, corded veins, staring coat, pulse accelerated and smaller than natural, pallid membranes, &c., are not unfrequently seen as the result of physicking animals taken up from a poor pasture in the spring. Similar signs also follow many debilitating diseases, and a stupid system of treating them by continued antiphlogistics. The horses of many proprietors that are fed on inferior food, worked hard, housed badly, and receive much medicine, suffer greatly from farcy and glanders. Sometimes the animals are apparently fat, and but that the pulse is weak, with anorexia, a pale condition of V. M. M. and slight coryza, nothing of a malignant character would be suspected. Whenever doubt is entertained animals should be isolated, and at once subjected to the inoculation test. This consists of taking the matter from the eyes and nostrils, and placing it upon a raw surface made at the bottom of the neck of the same animal, or a lancet may be plunged into the parts after the point has been charged with the virus. In a day or two the whole of the vessels in the vicinity, and others extending from the part some distance, will be found full, hard, and corded. Some of the glands may also probably partake of the tumefaction, the original wound, although covered with an incrustation, is readily exposed, upon which a white layer of matter exists,

and having no power of healing whatever. When the submaxillary glands are enlarged, round, hard, and well defined, discharges from the nostrils and eyes occur, with moist cough, debility, &c., particularly after disease, or in connexion with the circumstances noted, there are grave reasons for suspicion. Ulceration of the Schneiderian membrane is not always present. Auscultation may sometimes furnish evidences of *vomicæ*, and the thermometer an elevation of temperature not consistent with debility and want of combustive power.

GLASS.—Animals sometimes suffer from extensive lesions in the mouth, produced by pieces of glass. Cattle are fond of picking up all kinds of foreign bodies, glass among them; but the most common cause arises from the careless use of glass bottles in the administration of medicines, when the vessel is passed too far into the mouth and between the molar teeth. Glass bottles, particularly those having long necks, are very useful agents for administering medicines, when properly used, as the quantity can be more safely regulated, and choking and waste avoided, than by the more primitive "drenching horn." Tin bottles on similar principles are also preferable. The mode of use is simple. The operator standing upon the right side of the patient, after he is properly secured, draws away the cheek by inserting the fingers of the left

hand in the angle of the mouth. A pouch or pocket is thus formed, which receives the medicine from time to time, and conveys it to the mouth in suitable proportions for deglutition. The glass bottle, therefore, never passes between the teeth, or into the mouth, and danger from that event is avoided.

GLOTTIS.—See Fauces.

GREEN VITRIOL.—See Iron.

GUT-TIE.—Strangulation of the intestines in oxen, due to the passage of a portion through a rent in the peritoneum, or sac formed by the same, descending between the remains of the spermatic cord and pelvis. The *symptoms* are common to strangulation generally in horses, with the exception that in oxen this form is more slowly developed. The animal exhibits increasing uneasiness, during which the appetite and rumination are suspended. No discharge of fæces takes place after a time, but frequent tenesmus ensues, with partial eversion of the anus and proctorrhœa; he kicks at the belly, and stamps with the hind legs, changes his position frequently, going from side to side, crossing the hind extremities, lashing the tail, lying down and quickly rising: sometimes he obstinately remains on the knees for a few minutes, and, when standing, the back is repeatedly arched downwards, and

a moan is frequently uttered. Pressure on the right flank and exploration of the abdominal ring externally occasion great pain. The hand is passed with difficulty up the rectum, but the incarcerated intestine—filled anterior to the pelvis—may usually be felt after the exercise of patience, being specially recognised by the exhibition of pain when pressure is applied. Symptomatic fever is developed in accordance with the amount of obstruction and strangulation, as well as length of time the malady has existed. In the first stages the pulse is little altered, but towards the latter periods it becomes hard, frequent, and corded. Medicines, particularly purgatives, aggravate the case, and death ensues from gangrene. See Mortification.

Treatment.—The taxis, page 99, should be employed. This failing, an operation is required, which consists of opening the flank on the right side, removing the intestine, and separating and cutting off the end of the *vas deferens* to avoid subsequent union. See Rumenotomy. The animal may be cast previously, or secured standing against a stall partition or wall on the left side. When the operation is successfully performed, relief is at once apparent, a copious discharge of fæces also speedily follows, and the animal rarely suffers adversely.*

* This disease and its operation is described at greater length in Clater's "Illustrated Cattle Doctor." London: F. Warne & Co.

HÆMORRHAGE. — Various methods are adopted for the purpose of arresting an undesirable flow of blood. *Pressure*, which is very effective, may be applied to the trunk of an artery, higher up in the limb than at the point of hæmorrhage. For this purpose a flat web, or cord, is made use of, being tied round the part, and over a pad which is laid immediately upon the artery. A stick is then passed through the cord, at the opposite side of the pad, and turned, the cord is thus twisted, and pressure applied. A *plug* is most serviceable in many wounds, when the bleeding vessel lies at a great depth. All clots, &c., should be carefully cleared away, and the plug of rag, sponge, cotton, wool, tow, &c., made of a conical shape, is pressed with the point towards the bleeding orifice, and confined by pads of tow or rags, bandages, &c. Pressure upon the arterial trunk at a higher point, may also be required as an effectual proceeding. The plug sometimes fails, when the finger, or even the closed fist in large wounds, as in operations, will be effectual, if retained for some time. These measures are supposed to apply to those instances where the artery cannot be reached without extreme difficulty. When we can gain access to a large bleeding vessel, the ligature should if possible be applied. It must, however, be borne in mind, suppuration that ensues sometimes removes the appliance and hæmorrhage may recur but in a

measure is obviated by adopting the ANTISEPTIC TREATMENT. Small arteries are sometimes wounded in a longitudinal direction, as the *submaxillary* and *temporal*. No hope is entertained that perfect closure will be effected, or circulation re-established; the most safe and summary method is to divide the vessel across at the breach, when each end will probably retract and become impervious. The wound is then to be closed by proper means, and pressure applied to avoid false aneurism. The bleeding ends of small arteries may be seized by the forceps, and twisted, pinched, or pulled outwards. Besides these means others are applied, as cold water, ice, alum, perchloride of iron, chloride of zinc, nitrate of silver, creasote, corrosive sublimate, all of which act by coagulating the fibrin, which becomes a plug to the vessel, adhering to the coats that have been destroyed by the chemical agents, or deadened by the cold. The actual cautery at a *dead* or *black heat* is a most serviceable remedy. Certain mechanical agents from the natural order of fungi are also employed, as Amadou—*Boletus fomentarius*, or, as it is known in the shops, German tinder; *Boletus igniarius*, the agaric of the oak, commonly known as touchwood; *Agaricus chirurgorum*, or *Fungus igniarius*; also felt, wool, spider's web, &c. Internally, acetate of lead, large doses of turpentine, tannin, and all substances containing it, as galls, catechu, and

kino ; mineral acids, &c. &c. Hæmorrhage from the cord after castration sometimes proves alarming. The animal should be again cast, and artery sought for in the scrotum. If it cannot be reached it may be necessary to cut down upon the cord in the groin, and seize it there. Plugging the scrotum, even when powerful styptics are used, may not only prove abortive, but hasten a fatal termination by causing the blood to pass upwards into the abdomen.

When hæmorrhage takes place internally, as in rupture of the liver, spleen, or some large and important vessel, there are unmistakeable signs developed, as weak, small, and fluttering pulse, pallid membranes, syncope, cold extremities, great debility, convulsions, death. See Fainting.

HÆMORRHAGE AFTER PARTURITION is of two kinds: *uterine* and *vaginal*. In the first variety the quantity is great, expelled by violence, and at different periods, with evident pain and suffering. Vaginal hæmorrhage usually flows in a small stream, arterial in colour, coagulating when it reaches the ground. Sometimes the umbilical cord in connexion with a retained placenta, will permit a discharge of blood that may be mistaken for vaginal hæmorrhage. It however differs from the foregoing in being dark in colour, and does not coagulate. The first form is dangerous ; the second need not occasion alarm.

Treatment.—In hæmorrhage from the uterus, commonly known as *flooding*, assistance must be prompt. Remove the placenta, if retained, as quickly and as carefully as possible; if nothing else can be had at the time, administer full doses of turpentine made into an emulsion with eggs. Promote the contractions of the uterus by injections of cold water, and even mineral astringents, as solutions of chloride of zinc, alum, perchloride of iron, or vegetable astringents, as tinctures of catechu, kino, galls, &c. &c. Exhibit draughts containing such remedies as mineral acids, tannic acid, powdered galls, perchloride of iron, &c. Promote the external surface heat by clothing and friction. Stimulants must be withheld until the hæmorrhage has subsided, and even then they must be given only with caution when the depression is great.

In vaginal hæmorrhage, the use of cold ablutions and astringent lotions is usually sufficient. If it arise from the cord it seldom needs interference. The hand, however, may be passed up, and the cord drawn into a knot, or the placenta may be removed. See Abortion.

HARTSHORN.—See Ammonia, Caustic Alkalies.

HAUNCH, Injuries to.—These comprise severe bruises, fractures, and dislocation of the femur,

occasioned by falls, kicks, or blows inflicted in running against stationary objects.

Bruises usually end in large abscesses, the matter from which may burrow beneath the gluteal fascia and between the muscles.

Fractures take place at the anterior spinous process, the shaft, and also across the acetabulum, in which the ischium and pubis are not unfrequently involved. The shaft and trochanters* of the femur are sometimes fractured. In those which are confined to the shaft and acetabulum of the os innominatum, diagnosis is not always clear. There is no displacement or deformity, as the parts are so locked in by the mass of muscle around them, and effusion and extravasation insinuated between the divided bones prevents the eliciting of crepitus. The hand passed up the rectum during manipulation, or the ear placed upon the outside, may detect it. Deformity and increasing lameness occur within a few days, and no doubt then exists as to the location and nature of the fracture. In other fractures, crepitus with great deformity is distinguished, together with constitutional disturbance, and sometimes defecation, and even urination, is interfered with. Fracture of the anterior spinous process, or shaft of the ilium, may be united by rest, a smart blister being

* The head of the femur is detached in young subjects, from suppuration being established between the bone and epiphysis.

applied on the outside in order to restrict motion. Other fractures are incurable.

Dislocation of the femur cannot take place without rupture of the attaching ligaments, with several muscles, and will be known by great deformity, as well as altered motion of the part. Flexion and extension are imperfect, if not impossible. These signs are very apparent, with probable twisting of the toe outwards, when the head of the femur has passed into the obturator foramen. Great lameness continues in all cases, but in the slighter forms, the head of the femur wears away the walls of the cotyloid cavity, and movement to a certain degree is afterwards possible. In some animals abscess of the acetabulum takes place, when the femur, during motion, may be heard to pass inwards with a sharp sound. Such may also occur without abscess, when the ligaments are absorbed or ruptured, before the sides of the cavity are rubbed away.

HELLEBORE.—Three varieties of this plant are common to Britain—viz., *Helleborus fœtidus*, Stinking Hellebore, Setterwort, or Bearsfoot; *Helleborus niger*, Black Hellebore, and *Helleborus viridis*, Green Hellebore. All are narcotico-acrid poisons, having, however, less action upon the brain than the VERATRUM ALBUM, *which see*. Tannin is the only principle that exercises any neutralizing action

upon the alkaloid Helleborin. Besides mucilaginous drinks, animal charcoal, opiates, &c., are required as for narcotico-acrid poisons generally.

HEMLOCK.—See Conium.

HERNIA.—Simple hernia is known as a soft fluctuating tumour, existing in some parts of the abdominal walls, &c., generally reducible by the hand, after which the orifice, through which the intestines gain exit, may be felt beneath the skin. Hernia also suffers increase when the animal is made to cough. The signs of strangulated hernia are, abdominal pain, full and accelerated pulse, which speedily becomes small and hard, and at length imperceptible; obstinate constipation, violent tenesmus, rejection of enemata, and opposition to passage of the hand up the rectum. When the case arrives at a crisis, attempts to vomit are made. This proves a safe means of diagnosis in those obscure forms of hernia in which, after existing some time, union has taken place between the wound in the muscles and enclosed intestine.

Simple ventral hernise that are not large, and have only a small orifice in the parietes, may be treated by pressure derived from a roller, the clams, or piece of lead held by two tailed flaps, glued upon each side. See Many-tailed Bandage. Plaster

of Paris, a mixture of Fuller's earth, alum, pipe-clay, &c., are also used for a similar purpose.

Strangulated hernia requires more complicated treatment. Reduction must be attempted by the *taxis*, which consists of first casting the animal on the unaffected side, passing the hand up the rectum, and endeavouring to draw back the intestine, while an assistant gently manipulates the tumour to assist in reducing it. If such a proceeding fails, the integumental covering of the tumour must be carefully opened, the stricture removed by incision, gut returned, and orifice of exit closed by independent sutures passed through the external wound. The skin is afterwards closed in the usual way. See Wounds, Abdomen, Bowel, &c. Purgatives and enemas are necessary afterwards, with low and soft diet, rest and quiet, &c. See Gut-tie.

HIP.—See Haunch.

HOLLYHOCK.—See Althæa Rosa.

HOVEN.—If the probang or tube of the stomach-pump be at hand, let either be passed in order to give exit to the gas accumulated in the rumen. Full doses of ammonia, *largely diluted with cold water*, should be given. Cold water dashed over the body, with moderate exercise, answers in some cases. The great secret, however, is to *arrest fer-*

mentation, which is effectually accomplished by the exhibition of the *sulphites of soda** in cold water with ammonia, two to four ounces of the former, with an ordinary dose of any one of the compounds of the latter. See AMMONIA. As a *dernier ressort*, the trocar and canula may be inserted. Usually, however, the compounds of soda named, when promptly given, render this operation unnecessary. Brisk cathartics are required after the acute symptoms have disappeared.

HYDROCHLORIC ACID.—See ACIDS.

HYDROCYANIC ACID—Prussic Acid.—A narcotico-irritant poison, the sedative effects of which are so powerful and rapid that the irritant properties cannot be developed when moderate doses are administered. The symptoms are rarely delayed more than a few seconds after the poison has been administered, and begin with sighing, fixing of the limbs, and gazing round. In half a minute or less the animal drops in tetanic rigidity, is unable to rise, and suffers from convulsions; the eyes are retracted, and opisthotonos appears. Dogs howl piteously, fæces and urine are voided involuntarily, insensibility follows convulsions, and death often ensues in less than two minutes. Prussic acid is liable to vary in strength, and this will account

* "Veterinarian," vol. xxix. p. 215. 1856.

for the variable amount that produces death. One drachm has proved fatal in dogs, and at another time a similar animal has lingered a considerable period before death has taken place. One ounce given to a horse produced immediate paralysis, from which the animal shortly recovered.

Treatment.— *Cold affusion* to the head and spine should be persevered in, while water is also dashed in the face, and *artificial respiration* persistently performed. *Solutions of chlorine* gas in water, or *chloride of lime*, or the *hypochlorite of soda*—commonly known as Labarraque's disinfecting fluid, or chloride of soda, should also be given, or the solutions used may be given as enemata with benefit. *Ammonia* constitutes a very valuable remedy. The vapour may be inhaled, but internal administration should alone be depended upon. It should be largely diluted, and if the power of swallowing be absent, the stomach-pump must be resorted to.

Tests.—The *odour* of prussic acid is not always obtained. The volatile nature of the poison, particularly after death from small doses, renders this test inapplicable in many cases.

Solution of Nitrate of Silver yields with fluids containing prussic acid a dense white precipitate, insoluble in cold, but soluble in hot nitric acid; soluble in strong solution of potash, from which mixture Prussian blue is formed if a solution of sulphate of iron be added followed by a few drops

of sulphuric or hydrochloric acid. The white precipitate, when digested with muriatic acid, yields vapour of prussic acid; when heated in a reduction tube it yields the gas more abundantly, which may be ignited at the mouth, burning with a rose-coloured flame.

Sulphide of Ammonium, containing a slight excess of sulphur, added to the solution of prussic acid, and gently warmed, becomes colourless, and on evaporation yields crystals of sulphocyanate of ammonia. If these are dissolved in pure distilled water, weak solutions of the perchloride of iron yield an intense blood-red solution, which is bleached by solution of corrosive sublimate.

INTESTINE.—See Bowel.

INVAGINATION OF THE INTESTINES—INTUSSUSCEPTION—unless accompanied with discoloration, strangulation, blackening, gangrene, &c., must not be viewed as the cause of death. The peristaltic motions of the digestive canal are sometimes more active before death, and continue in parts for a period afterwards. A portion which is stationary and relaxed may, therefore, receive one that is active and of less size because of its contraction, but no discoloration is the consequence. This is important in making *post-mortem* examinations. The condition is common in the human subject,

dogs, cats, pigs, &c., and less so in the horse and ruminants. Vomition or extreme nausea, with a running-down pulse and violent tenesmus, characterizes invagination in life. Mr. William Anderson, M.R.C.V.S., Glasgow, by observation the accuracy of which reflects great credit, has established that, whenever horses suffer from twist of the intestines, invagination, strangulation, and the like conditions, there is an inevitable and constant disposition to strike out forcibly with one hind leg, the general appearance of the creature unmistakeably denoting gradual dissolution.

IODIDE OF MERCURY—THE GREEN OR PROTO-IODIDE—Insoluble in ether, water, or solution of chloride of sodium. Volatilizes at a red heat, and decomposes with the formation of a small portion of the red oxide. When carefully heated a yellow sublimate is formed, which becomes red on being rubbed, leaving behind a globule of mercury. The colour, a yellowish green, may also serve as a means of identification. See MERCURIAL POISONING.

IODIDE OF POTASSIUM.—A valuable solvent for iodine, with which it should always be prescribed when the latter is intended for internal administration. See IODINE. This salt is also an efficient remedy in solution, grs. iv to grs. viij to the

ʒ of distilled water, for opacity and ulcers of the cornea. The doses for the horse internally are ʒss to ʒij; for cattle ʒj to ʒiij. When combined with iodine, the salt should be prescribed in doses that are double that of the metalloid, to insure proper solution and action.

IODINE.—The doses of this metalloid are from grs. xx to ʒij for horses and cattle; dogs, grs. iij to grs. x, but these doses may be decreased by one-half when combined with Iodide of Potassium, *which see*. Iodine is a valuable corrective of the assimilative functions, and digestion generally, and allays thirst. It is therefore largely used in diabetes and albuminous nephritis, but should always be preceded by a laxative. See Iodism.

IODISM.—The disturbance which ensues after the continued administration of iodine, is known by this term. The signs are languor, depression, anaphrodisia, coryza, injected mucous membrane, anorexia, distaste for water, and absorption of glands. If the medicine is continued, abdominal pains ensue with ptyalism—emesis in the dog, hot skin, dyspnœa, diarrhœa, amaurosis, vertigo, convulsions, death.

Treatment.—Discontinue medicine. Emetics in the dog. Strong mucilaginous or albuminous draughts containing starch and opium.

Tests.—Iodine is volatile, and soluble in alcohol and watery solutions of iodide of potassium. The urine is the source of elimination from the body, and when mixed with starch and afterwards acidulated with nitric acid the characteristic blue colour is produced. The odour of iodine is marked in cases of poisoning by it.

IRON, Sulphate of — Green Vitriol — Copperas.—In large doses this compound is an irritant poison, and when desiccated, is endowed with caustic properties. It produces symptoms like sulphate of copper, excepting the coloured stains, which are dark green or even black. If continued for a length of time in medicinal doses, like copper, it produces marasmus, debility, and tremors, with black dejections.

Perchloride of Iron—*Muriate of Iron—Tincture of Steel*—produces great irritation, with corrosive action of the alimentary canal, diarrhœa with tenesmus, cold extremities and body, depression, &c., after the manner of irritants generally.

Treatment.—Alkaline solutions, magnesia, chalk and water, milk; calmatives, stimulants, purgatives, &c.

Tests.—Sulphide of ammonium throws down a black precipitate; tincture of galls also a black precipitate; ferrocyanide of potassium yields Prussian blue; the presence of chlorine may be detected by nitrate of silver and nitric acid.

Sulphate of iron should always be administered in combination with carbonates of soda or potash.

KNEE, Injuries to.—Serous cysts are common to this part, which treat as named under Abscess. The tendons and theeæ are sometimes damaged or destroyed, and joints even penetrated. See Contused Wounds, Open Joint. Sometimes an incised wound occurs from falls upon newly-laid stones; they are, however, rare in comparison with the contused variety. See Incised Wounds. Constitutional symptoms are usually present, which may be met with the usual febrifuges, sedatives, or opium and calomel.

LARYNX, Spasm of.—See Dyspnœa, Apoplexy (Pulmonary).

LATISSIMUS DORSI.—See Teres internus.

LAUDANUM.—Tincture of Opium.—Each ounce contains nearly half a drachm of dry opium. The dose is for horses f℥j to f℥ij, cattle f℥j to f℥iij. Usually, however, these quantities are greatly exceeded, or, as the tincture forms a never-failing ingredient of the colic draughts of some practitioners, its repetition is heedlessly undertaken, and nature of cases considerably aggravated thereby. The treatment of indigestion in all its forms by

continued opiates and antispasmodics is not justified by any fact in physiology, particularly without cessation or alteration of the remedy. See Opium.

LEAD POISONING occurs in two forms, the *acute*, and *slow* or *chronic*. In the first variety, the results are witnessed after the animal has consumed paint, or various compounds of the metal, or thin and small portions of metal itself. The signs are not unlike those which are developed in acute indigestion, termed grass staggers. The chief points of difference lie in the distended rumen, which is paralysed; early evidence of cerebral disturbance, as dilated pupils with amaurosis. The pulse is slow, but becomes small and quick as abdominal pain ensues; the respiration is hurried and irregular. Constipation of a severe kind is present, which not uncommonly gives way to an offensive diarrhœa. Muscular twitchings are observed in the limbs, delirium comes on which alternates with convulsions, and the animal dies in an extreme state of nervous exhaustion.

The *chronic* form is seen in the neighbourhood of lead smelting works, where the vegetation is covered or impregnated with the metal, or its oxide in a fine state of division. Signs of general disorder in the functions of the body are at first mild, but at length become evident manifestations of pain. The rumen is distended, great thirst exists, and the

teeth are ground harshly between the paroxysms of abdominal pain; the pulse and respiration are accelerated, secretions and excretions diminished, and the gums assume a leaden colour on their alveolar margins. These succeed to high fever, ptyalism, constipation, weakness across the loins, great prostration, hollow flanks, twitchings, convulsions, asphyxia, death.

Treatment.—Enemas, containing sulphuric acid, and draughts having soluble sulphates in solution. The latter should be given at first in cathartic doses, and subsequently, in daily laxative quantities, acidulated with sulphuric acid. Solutions containing alum, iodide of potassium, sulphide of hydrogen, should also be given. During the exacerbations of pain calmatives are indicated, and febrifuges, as the sulphates in high vascular action. Strychnine internally, or by the endermic method; or electricity to overcome nervous depression.

Tests.—Obtain a clear solution of the metal by digesting in nitric acid. *Dilute sulphuric acid* gives an abundant white precipitate, soluble in hydrochloric acid and excess of caustic potash. *Sulphide of ammonium*, a black precipitate, visible in very dilute solutions. *Iodide of potassium*, a yellow precipitate, soluble in potash and hydrochloric acid. *Chromate of potash*, or *chromic acid*, a yellow precipitate. Potash solutions of lead are blackened by sulphuretted hydrogen.

LIGHTNING, EFFECTS OF. — The common signs of the effects of lightning, when the shock has not been sufficient to destroy life, are, insensibility, great prostration, paralysis, flaccidity of muscles, and suspended animation—ASPHYXIA ELECTRICA. The immediate effect is to disturb violently the nervous system, and secondarily, to suspend the animal functions. The passage of the electric fluid may usually be traced on the hair, which is singed. Death frequently results promptly. The circulation is arrested, blood uncoagulable, and right side of the heart full.

Treatment.—Resuscitation should be attempted by means of cold affusions over the trunk and face. Flagellation, extensive friction over the whole surface, artificial respiration, with the exhibition of powerful stimulants, particularly ammonia, and electricity through the chest or course of the phrenic nerve, must be perseveringly adopted.

LIME.—Horses employed in the removal of lime are frequently sufferers from its action upon the skin. The eye is also damaged by it, and voracious animals have been known to swallow it greedily, and afterwards suffer from large excoriations about the mouth, as well as irritation internally. Dilute solutions of sulphuric acid are the most useful applications for removing it from the skin and places beneath the harness. For the eye, solution of alum

and tepid water are valuable; the latter should be used by a syringe, when the palpebræ are separated. To counteract the effects of lime internally, use copiously dilute sulphuric acid in tepid water; or fixed oils and albuminous draughts. Excoriations may be treated by alum or anodyne lotions, lead liniment, &c., after the same have been carefully cleansed by dilute sulphuric acid. Constitutional symptoms require febrifuges, derivatives, &c.; afterwards enjoin light and easily digested food.

LOLIUM TEMULENTUM. — See Darnel Grass.

LUNAR CAUSTIC.—See Nitrate of Silver.

LUNGS, Apoplexy of.—See Apoplexy (Pulmonary).

LUNGS, Acute Congestion of.—See Apoplexy (Pulmonary).

MANGOLD WURZEL LEAVES are very poisonous, particularly in dry seasons. Young pigs suffer acutely after eating them. The toxic principle is the oxalate of potassium, and symptoms produced are those of Oxalic Acid, *which see*; under which also the necessary treatment is detailed. In addition to the signs there enumerated,

the peculiar sour odour of the dejections in acute poisoning is very remarkable.

MANY-TAILED BANDAGE.—A very useful agent in the adjustment of parts, the application of poultices, &c. It consists of a piece of strong fabric, of suitable size, upon the sides of which are securely stitched an equal number of bands—also of suitable strength, which are tied together after the flat part has been placed round the affected limb, &c. Slightly modified, it is also an efficient agent in closing large wounds, in which suppuration has destroyed the sutures or caused them to drop out, and in which re-insertion is not admissible. For this purpose the central part, which should be as long as the wound, is cut down the middle to form two strips, having the tails on one side only. Each flat part is next glued upon the skin, a little distance away from the edges of the wound, the tails being towards each other, and in this position are left to dry. After this part of the bandage is secured, flat strips of wood are laid upon the edges of the wound, and covered with tow, &c., if necessary; the parts are then dressed and the corresponding bands of each side brought together and tied. In this position, if desired, the wound can be kept under examination, and dressed regularly without taking off the appliances. The plasters employed to secure splints on a limb are very use-

fully cut in this form. A corresponding number of bands from each side are caused to overlap each other alternately; and by this means not only cover a large surface without wrinkle or crease, but exert almost any degree of pressure at will.

MARASMUS—Wasting away. Animals frequently exhibit the disposition to become poor, or waste rapidly, even when the food is faultless. The causes are depressing medicines used too frequently, minerals too long continued as tonics, inducing a slow kind of poisoning. Bad food, injuries to the mouth, and anorexia from various causes, give rise to marasmus. It is also seen as a sequel of many diseases, as those of the lungs and digestive organs, &c., as well as in old age, purely from decline of nervous power. See Iron, Copper, &c.

MEMBRANES, Uterine—Retention of.—See Abortion.

MERCURIAL POISONING occurs in two forms, the *acute* and *chronic*. In the acute stage all the signs of irritant poisoning are developed—*e.g.*, gastro-enteritis, offensive diarrhœa, proctorrhœa, tenesmus, violent emesis in omnivora and carnivora, with mixture of blood, great depression, laboured breathing, running down pulse, decline of animal temperature, partial coma, and agonizing

death. In those instances where poisoning arises from the cumulative effects of the metal or its compounds, special signs accompany the first indications of disturbance. With anorexia there is fœtid breath, ptyalism, looseness of teeth in the horse, dog, and pig; incessant cough, general disturbance of functions, which merge into those already given.

The *chronic*, or *slow* form, arises from the use of small and repeated doses of the insoluble compounds of mercury internally, without due care being exercised; but most commonly is witnessed as an effect of mercurial or blue ointment, as an external application to sheep, dogs, and horses. Such cases are characterized by extreme weakness and dulness, small and frequent pulse, with laboured respiration, anorexia, dysphagia, tumefaction of tongue and fauces, ptyalism, blue line along alveolar margins, offensive breath and diarrhœa, diuresis, œdema of extremities and all dependent parts of skin, tremors, muscular spasms, mercurial erythema, decline of animal temperature, gradual prostration and death in periods varying from a few days to several weeks.

Autopsy.—Mucous membranes devoid of epithelium, or are pale and raised by sub-cellular infiltration; that of the stomach being covered by a thick layer of mucus and epithelium, and that of the small intestines exhibiting the inflammatory wreath or halo; peritoneal ecchymosis, softening of glands, accumulation of serum in closed cavities, bones

brittle, and in long-standing cases abscesses are found in the lungs.

Treatment.—Avoid venesection, as it induces a fatal result; remove poison from the skin by washing or shearing the fleece. Shelter and warmth are required, and, in addition, albuminous and mucilaginous drinks; chlorate of potash to check salivation, and astringent gargles, are also useful; sulphur, or the sulphide of iron, are valuable antidotes; the sulphate, perchloride, &c., may be combined with quassia, but gentian and calumba must be prescribed alone. Those animals in which the signs of mercurial poisoning are slight, should receive ample exercise and food, with eliminatives to promote the discharge of the metal. When the toxic effects of mercury have appeared from administration as a remedial agent, it must at once be discontinued.

Tests.—Mercury is largely discharged by the urine; it should therefore be carefully examined. The liver, spleen, lungs, kidneys, intestines, and ingesta also offer favourable evidences of the presence of mercury, after poisoning has taken place from it or the various compounds. Portions of these should be reduced, and boiled with dilute hydrochloric acid until decomposed. Pieces of clean copper sheet, or gauze, boiled in such mixtures, become coated with a silvery film, and when dried and heated in a test-tube yield metallic mercury,

which sublimes and condenses in the characteristic globules. For the detection of the various compounds of the metal, see the directions given under each.

MORTIFICATION.—The loss of vitality in, or death of, a part. It is divided into *gangrene* and *sphacelus*; the first is intended to denote the incipient stage or process of dying, and the last the complete result or actual death. Among the lower animals sphacelus is rare, death taking place before that action can be complete: gangrene, however, is more common. The causes are, inflammation or pressure, limiting or arresting the supply of blood to the part. The signs are somewhat as follow:—When gangrene is about to take place in a limb already affected by inflammation, swelling grows less tense, and sometimes a serous exudation is seen externally; pain, heat, and tenderness suddenly cease, and a part but recently suffering from the most acute sensation, may now be even roughly handled. Sensation gradually subsides, but the power of function declines rapidly; and where the absence of hair admits, the skin will be observed to change from an acute redness to a livid or purple colour. Constitutional symptoms are likewise coincident and remarkable. The active character of the febrile signs are suddenly changed to the typhoid form; pain in internal organs, manifested by

violent paroxysms, now suddenly ceases; the animal becomes calm, rises and seeks for food, but takes none, and at length maintains the standing position; the skin becomes dry after excessive perspiration; pulse becomes small, frequent, and rapid, and frequently irregular or intermittent; the countenance assumes a haggard expression; respiration is tranquil, but frequent sighings come on, and tremors seize the extremities. When the intestines are the seat of mortification, hiccough or belching (eructation) is sometimes present; general coldness seizes the whole body; the features are pinched, and the animal exhibits the appearance of being under the effects of some soporific agent: the pulse now becomes what is known as "running down"—*i.e.*, smaller, weaker, more rapid, and at length imperceptible; soon the animal totters, reels, and falls forward, and rarely lives an hour after the first appearance of the signs.

MONKSHOOD.—See Aconite.

MOINDERING.—See Lead Poisoning.

MEGRIMS.—See Vertigo.

MISCARRIAGE.—See Abortion.

NAPHTHA.—See Creasote.

NECK—Injuries to.—Fracture and compression

of the trachea is not uncommon when acute dyspnœa is set up, calling for prompt relief. The windpipe will require to be opened, but the part selected and mode of performing the operation will depend upon the situation of the injury. The opening must always be made *below* the stricture, the muscles of the vicinity being placed on one side or dissection carried through them, when this has to be effected at or towards the bottom of the neck. Great care is also demanded, because of the important vessels in that locality. Frequently the trachea is permanently constricted, and the animal is no longer serviceable for fast work. Similar causes produce rupture of the walls of the œsophagus, which are characterized by diffuse swelling that pits on pressure, and contains a semi solid substance, and on the outside of which is the characteristic œdema Pressure on the trachea subsequently takes place from accumulations of food, which pass into the subcellular and intermuscular spaces. Dyspnœa and choking come on. No relief takes place from the use of the probang or emollient drinks, and death usually ensues before twenty-four hours, except in slight cases. The only good expected from treatment is frequently denied by the extent and nature of the rupture of the œsophagus. Small wounds may be united after the ingesta have been cleared from beneath the skin, but in the majority of cases help is vain. See Stricture.

NERVOUS APOPLEXY. — This affection, which is common to horses and cows, is known by the absence of all cerebral disturbance, weak pulse, which is sometimes small, but not usually rapid. The appetite remains; there is also general vivacity, but the bowels are usually constipated, and there is little fever present: the limbs do not always lose their power of movement, although the ability to stand is absent. Treatment consists in gently moving the bowels, avoiding nausea as much as possible, to which succeed the exhibition of stimulants, vegetable tonics, perchloride of iron, strychnine, nux vomica, &c. Shelter and good food are indispensable agents.

NIGHTSHADE.—See Belladonna.

NITRIC ACID.—See Acids.

NITRATE OF MERCURY, in solution, behaves as corrosive sublimate with the tests given, excepting a negative action with the chloride of silver. Bright copper immersed in its solution is covered with mercury, and the blue nitrate of copper is held in solution. See Mercurial Poisoning.

NITRATE OF POTASH — Saltpetre Nitre.—Repeated doses of this salt cause great depression, lowering of temperature, profuse urina-

tion, &c. Large doses (four ounces) have been known to cause inversion of the bladder in the mare; after eight ounces were given, violent abdominal pain and diarrhœa came on, with great prostration of strength, tremors, convulsions, paralysis, amaurosis, coma, and death in a few hours. Nitre is evacuated unchanged by the urine, from which it may be crystallized. It is known by the lilac flame it produces when burning; by its deflagrating rapidly when ignited, and the production of nitric acid fumes when heated with slips of clean copper, and a few drops of sulphuric acid.

NITRATE OF SILVER.—A useful application for removing nebulæ, and promoting the healing action in the ulcers of distemper which occur in the cornea of dogs, as well as wounds of an unhealthy character. Applied to the mouths of bleeding arteries, a plug is formed and hæmorrhage arrested. Solutions for the former purpose usually contain from grs. iij to grs. x to the ounce of distilled water. Nitrate of silver is the principal test for Chlorine and compounds in which it is present.

NOSE, Bleeding from.—See Epistaxis.

NUX VOMICA.—The doses of nux vomica are, for horses, ℥ss to ℥j; cattle, ℥j to ℥ij. It forms a useful remedy in nervous debility (adynamia) of

the cow, nervous apoplexy of the horse, and paralysis generally of all animals. The tincture is sometimes used endermically in coma. The alkaloid is STRYCHNIA, which see. Like it, nux vomica should be given until the earliest physiological signs are manifest, before it is permanently withdrawn.

OMENTUM, PROTRUSION OF.—Portions of this membrane sometimes escape from penetrating wounds inflicted in hunting, when the animal is said to be "staked," and by the horns of cattle, forks, falling upon an upturned harrow, &c. From experience gained in such cases, there is no danger to be feared in the immediate amputation of the whole of the visible portion. Hæmorrhage is somewhat considerable at times, but not permanent, and rarely calls for attention. Closure of the wound and treatment of the constitutional symptoms should be based upon general principles. The omentum frequently forms umbilical, ventral, and scrotal hernia. Its descent during castration is also not uncommon.

OPEN-JOINT.—When an opening has been made in the capsule of a joint, by puncture or incision, &c., and the orifice is small, the moderate application of the actual cautery to the wound often proves sufficient to effect a closure. Lunar caustic may also produce the same. Care is, however, required, as by cauterizing too severely, a

greater amount of destruction than reparation of tissue takes place, the wound is seriously enlarged, and fatal effects may follow. The ointment of cantharides or mylabris cichorii, when rubbed on the surface around the orifice, will frequently set up the desirable amount of swelling and inflammation, and thus approximate the cut edges. The lips of an incised wound may be brought together by the twisted suture, and afterwards treated by the Antiseptic method with success.

With *bruised* and *lacerated* wounds of joints other means are required. Extraneous matters should be carefully removed by forceps, or continued fomentations if necessary, and movement of the articulation prevented as much as possible by splints, gutta percha moulds, &c. If parts exhibit a loss of vitality, the use of a stimulating application, as the *linimentum saponis*, *lin. terebinth.*, *lin. camph.*, *lin. ammon. dilut.*, or *ung. lyttæ ves. mit.*, may be variously employed.

Coagulation of Synovia, as it issues from the wound, is mainly essential to the closing of joints, and may be effected in various ways:—By sol. zinci chlor., (strength ʒij of the salt to fʒxx of aqua dest.) carried by means of a sponge *above* the wound, from whence it is allowed to flow over the raw surface. This should be applied very frequently, and as a rule is highly satisfactory in its effects. A *plug of corrosive sublimate* is used by some prac-

titioners. It is placed *within* the orifice, and suitable pads and bandages above. *Nitrate of silver* is used in the same manner. A mixture of equal parts of oxide of zinc and wheat flour; or of alum and gum arabic in fine powder. This and the foregoing are applied dry. Alum, pipeclay, and Fuller's earth, equal parts in fine powder, and lastly, plaster of Paris, which with the preceding are applied in a smooth paste, made and laid on in successive quantities as each portion hardens. As long as evidence of suppuration and escape of synovia around the application are not observed, it is retained; otherwise the parts are exposed carefully, dressed by some healing fluid, a fresh supply of the application placed upon the wound, and the whole securely bound up. The dry powders are admirably kept *in situ*, by means of a suitably large stocking, *minus* the foot, which has been drawn up the limb, and upon the outside of which bandages are placed. A more recent method consists of fixing the limb—if the knee, hock, or joints below are involved—by means of starch bandages and concave wooden or iron splints. The wound is purposely exposed, and constantly treated by astringent lotions or other agents to promote healing, the synovia being allowed to accumulate by coagulation at the orifice, and act as a plug. By thus preventing motion, the closing of the wound is much more rapid and secure.

In *puncture* of the *coffin* or *navicular joints*, through the cleft or side of the frog, the actual cautery is the most effective remedy. It should be applied until the sensitive parts give evidence of pain, when sufficient swelling and inflammation arise to close the wound in the soft textures. When synovia escapes in such cases, paring the hoof and exploring the wound lessen the chance of success, and frequently even deny it. If the body which inflicted the damage be withdrawn, such a proceeding is clearly uncalled for, but in the event of being practised assists greatly in augmenting the tendency to sloughing internally, by which joints, hitherto not affected, are opened, and at a stage too late to admit of closure by any means that can be adopted. The timely application of the actual cautery, the edge of which is moderately pressed and rubbed over the course of the opening in the hoof, usually prevents such adverse states by inducing a greater activity in the parts beneath.

OPIUM.—In cases of poisoning by this drug, the mode of treatment will depend upon the stage at which the patient is observed. While poison remains in the stomach attempts should be made to dislodge or neutralize it. Tannin has been found to be of *no* service as an antidote; coffee, tea, and quinine are more likely to be successful. Animal charcoal reduces the action of morphia, but requires to be

promptly administered and in large quantity. Dogs should be excited to vomit, and other animals may receive brisk cathartics and enemas to carry off the poison, as well as overcome the resulting constipation. *Ammonia must be scrupulously avoided, before the full effects of opium are manifest;* but if absorption has ensued its administration is attended with benefit. Bloodletting may be productive of good in early coma, when the pulse is full and slow; cold affusions should be applied to the head and withers, flagellation to the body generally, nux vomica, strychnine, and belladonna internally, all of which tend to counteract the tendency to general nervous depression, and annihilation of the cerebral functions.

Tests.—In order to demonstrate accurately the presence of opium, chemical manipulation is directed towards separating and proving the existence of two constituents—viz., morphia and meconic acid. For this purpose the mixture of organic matters is treated with dilute acetic acid, digested for two or three hours, and repeatedly filtered to obtain a sufficiently clear solution for delicate colour tests. This is then mixed with a solution of the acetate of lead as long as a precipitate is allowed to fall, when the whole is heated to about 208° Fahr., and afterwards filtered. The clear solution thus obtained contains *acetate of morphia;* the precipitate is *meconate of lead.* To the solution *perchloride of*

*iron** is added, which gives a blue colour, resembling weak solution of ink; *nitric acid* produces an orange red colour, which rapidly changes to a yellow; *iodic acid* admits of a separation of iodine, giving the characteristic brown colour and odour of the substance, which is further detected by the use of a solution of starch.

The *meconate of lead precipitate* is now taken and washed, and while being agitated in distilled water is treated by a stream of sulphuretted hydrogen until the black precipitate ceases to fall. The residual solution is then filtered, heated, again filtered, and lastly reduced by evaporation to one-half its bulk. To a clear portion of this a solution of the *perchloride of iron* is added, when a deep blood-red solution is formed. This colour is precisely the same as that produced by the action of sulphocyanide of potassium upon a per-salt of iron, but differs from it in being unaffected by a solution of the bichloride of mercury—corrosive sublimate.

ORPIMENT—Sulphuret of Arsenic—contains a large per centage of arsenious acid, and is highly poisonous itself. It is known by its bright yellow colour, insolubility in water and hydrochloric acid, but rapid disappearance in a solution of potash. When boiled with dilute muriatic acid, arsenious acid is produced, and the solution yields metallic

* This test should be nearly neutral.

arsenic by reduction with soda and nascent hydrogen. For signs and treatment of poisoning see ARSENIC.

OS UTERI—CLOSURE OF.—See ABORTION.

OXALIC ACID.—In consequence of the great resemblance that exists between the crystals of this acid and the sulphates of zinc and magnesia, it may be administered in mistake for either. The usual signs are great distress, abdominal pain, diarrhœa, small and weak pulse, prostration, tremors, convulsions, stupor, and death. Dogs vomit dark coloured matters having an acid reaction.

Treatment.—Avoid all soluble alkalies, but administer emulsions containing chalk or magnesia, and in their absence oil or animal charcoal. Promote vomiting in carnivora.

Tests.—Nitrate of silver throws down a white precipitate, soluble in cold nitric acid. Dried and heated on platina foil it gives rise to a white vapour, slight detonation, and disappears. Solution of sulphate of lime, or lime-water, gives a white precipitate soluble in nitric acid, but unacted upon by vegetable acids. The leaves of the MANGOLD WURZEL owe their deleterious properties to this acid.

PARACENTESIS.—This operation is required for two purposes, the evacuation of accumulated

fluids, the products of disease, and gaseous emanations, the result of indigestion.

Paracentesis for Ascites. — The trocar and canula used are the same, or rather smaller than that employed for the operation on the thorax to be described. The skin is first forcibly drawn to one side, and punctured at a point midway between the umbilicus and sheath of the horse, or between the former and the mammæ of the mare, &c., in the direct course of the *linea alba*. A lancet may be taken to puncture the skin, but it is not imperative. The trocar is generally used alone for the purpose; it is firmly but carefully pushed through the whole of the structures, and withdrawn immediately the resistance is no longer felt, in order not to penetrate any of the abdominal viscera. The canula is then passed higher up, and secured for the desired period by a string attached to a bandage placed round the body, which is also intended to compensate, by regulated pressure, for the loss of fluid. The application of pressure to the abdomen is important, and forms one of the principles of treatment. If the escape of fluid is rapid, and the quantity considerable, without such a provision the animal may suffer from syncope of a very sudden character It may also be required to retain the canula, in order to admit of the discharge of fluid that is likely to accumulate. When, however, it is removed, the skin returns to its original position, and covers the orifice,

effectually preventing the access of atmospheric air.

Paracentesis for tympany of the bowels.—The trocar necessary for this operation is much longer and finer than that just named, and of the diameter of the instrument employed by the practitioner in human medicine for hydrocele. The *middle of the right flank* is chosen by some, where, however, probably only the small intestines may be punctured, and a portion—not the whole—of the gas escapes: a proceeding which depends upon the pressure exerted on this part of the alimentary canal, and cuts off communication throughout. Only a convolution of the tube is therefore liable to be evacuated. The *right iliac region* is more generally the part at which the puncture is made, the object being to transfix the *cæcum* or *colon*, which, by virtue of the distension, are most likely to be found in that locality.

Paracentesis Thoracis.—The place chosen for this operation is one of the intervals between the *seventh* and *eighth*, or *eighth* and *ninth ribs*. The skin is first drawn to one side to the extent of one or two inches, and a puncture made with a lancet at the spot, which should be immediately *in front* of the rib. The trocar and canula are then cautiously passed through the intercostal muscles, the former being withdrawn immediately it has entered the thorax, and the canula pushed

farther in. When the evacuation of the fluid is complete, or carried as far as desirable, the skin, on withdrawal of the canula, passes to its original position, overlapping the wound and acting as a valve against the introduction of atmospheric air to the thoracic cavity. The precaution as to bandages and too rapid flow of fluid, requires to be observed in this operation, as already detailed.

PARONYCHIA.—An abscess affecting the secreting substance or coronet, and adjacent parts of the hoof. Treads—*Paronychia Equi*—in the horse are common in winter, and liable to assume complicated characters; in the end forming characteristic sinuous chronic wounds, leading to permanent lameness as well as deformity of the hoof. At the outset, symptoms are often most urgent, consisting of great pain, lameness, and high fever; but all untoward results may be averted by the prompt use of neutral salts, as pot. nit., pot. chlor., &c.; ammon. acet. liq. in full doses. Aconite finds favour with some, but may generally be dispensed with in these cases. The next proceeding is to *prevent the formation of pus*, which is effectually performed by the use of the Antiseptic Treatment. The analogous affections in cattle and sheep known as "foul," "foot halt," "the low," &c., *Paronychia bovum et paronychia*

ovium, readily give way to the same measures when instituted early. In later stages free evacuation of pus, and perfect removal of adventitious substances and loose horn are required. The sinuses are destroyed by daily injections of hydrarg. bichlor. in solution, and further improvement and healing power maintained by preventing the access of air, dirt, and moisture, as directed under *Antiseptic Treatment*.

PATELLA, DISLOCATION OF.—See DISLOCATIONS.

PELVIS.—See HAUNCH.

PETECHIÆ.—See ECCHYMOSIS.

PHOSPHORUS forms one of the ingredients of rat-killing compositions known as phosphor-paste. The signs of poisoning are characteristic. There is great thirst, perceptible odour of the poison, and, when the quantity taken has been considerable, the breath and fæces are luminous in the dark, with violent constitutional disturbance. Dogs vomit dark, and even luminous matters.

Treatment.—Avoid oils, fats, broths, soups, &c., but administer large quantities of solutions of potash, soda, or magnesia. Emetics to dog, afterwards opiates, &c.

Tests.—Small portions may be found among the viscera or in vomited matters, and known by its solubility in ether, alcohol, oil, and bisulphide of carbon. Is destroyed amid violent combustion if touched with a red-hot wire; unaffected by water, but quenched by alkaline solutions. The viscera are luminous in the dark.

PLACENTA, Retention of.—Remove mechanically at once in the mare; a few days' delay in the cow does no harm, but after putrefaction sets in, retention may produce disagreeable effects by favouring absorption. If debility is evident, diffusible stimulants, tonics, and warm aromatics, may be prescribed with advantage. See Abortion. Injections of dilute solutions of chlorine gas, carbolic acid, chloride of lime, perchloride of iron, muriatic acid, chloride of zinc, &c., are also beneficial. They should be copious and possess a temperature of 95° to 100° Fahr.

POISONING.—In all urgent cases to which the veterinary practitioner is called, particular attention should be directed to the symptoms, in order to detect any variation or addition to the category usually observed. The rapid development of gastro enteritis, diarrhœa, with other signs of constitutional disturbance, as coma, convulsions, paralysis, amaurosis,—vomition in carnivora, particu-

larly when specific characters are attached to the ejected matters, as mixture of blood, acid reaction, &c.—erosions or stains about the mouth, nausea, ptyalism, frequent attempts to swallow, incessant cough, intolerable thirst, tenesmus, proctorrhœa, sighing, small, frequent, feeble, or imperceptible pulse, &c., point to extreme conditions; and when any one of these is present, close attention may discover collateral signs which become the specific tokens of the presence of noxious agents. The history of cases assists materially in the clearing up of many diseases, but it is to be feared that the practitioner has not unfrequently to make his investigation unassisted, and with the result of suspicion only as to the cause. Recovery in cases of poisoning among the lower animals is not common. Delay is too frequently, and even purposely indulged in before help is obtained, and chances of success are thus far removed. When, however, a post-mortem examination is made, further suspicions may be aroused by such signs in combination as inflammation, thickening from effusion of lymph, erosion, perforation, invagination, colour stains, carbonization, softening or partial solution, presence of foreign matters, &c. See Sudden Death, Emesis, Invagination, Diseases.

POTASH.—See Caustic Alkalies, Nitrate of Potash.

POTASSIUM, Cyanide of.—See Hydrocyanic Acid.

POTASSIUM, Oxalate or Binoxalate of.—See Mangold Wurzel and Oxalic Acid.

PROBANG, Passing the.—This instrument is made use of in the following way. If the patient be *a horse* he is reversed in his stall and a strong halter placed over his head. An assistant, No. 1, places on a twitch having a handle at least four feet long. Assistants Nos. 2 and 3 secure the ear of each side by one hand, placing the other *flat* over the nasal bones, or the halter may be held by one. Assistant No. 4 holds up a forefoot, or it may be strapped up to suit convenience. The floor should be lightly covered with sand, sawdust, or wheaten chaff, to prevent slipping on greasy stones. The operator, having confidence in these assistants, now seizes the tongue, slightly draws it forward and inserts a strong balling iron, about three inches wide, between the jaws, which must be held in the hand of assistant No. 2 or 3. This will prevent the animal getting the bulb of the probang between the molars, greatly to its detriment, and that of the œsophagus when it reaches that tube. The instrument is now passed over the tongue, in a central line, backwards through the pharynx, when the practitioner should satisfy himself that the œsophagus has been reached before going farther. A

safe course insured, the operator moves gradually onward to the obstruction, which, when reached, by firm but very steady pressure exerted upon it from behind, descends to the stomach, and relief is gained.

In *cattle* similar precautions are required, the differences being in the mode of securing the animal. The horns prove valuable agents, while the nose can be held by the bull-dogs or nose-pincers. Cows are seldom so violent as horses under choking, and are more readily treated.

Cats and Dogs suffer frequently from accumulations of suddiug, sweet biscuit, &c., in the œsophagus. The ordinary male horse catheter answers very well for removing such obstructions; but great care is required in order not to strangle the animals by the mode of securing them. Dogs may be conveniently held by the ears and between the knees of an assistant; but cats are best placed in a strong wide sack above the fore legs, the remaining sides being placed together and brought round the animal in a coil. The head is thus left out and the patient is held across the shoulders between the knees of an assistant, while one hand keeps the head steady. A piece of wood is used as a gag, being inserted on one side only, when the catheter may be projected down the œsophagus with ease.

PROCTATRESIA — Imperforate anus. — In

cases of constipation, particularly when no faeces have been passed, accompanied with abdominal pain, constitutional disturbance, and forcible expulsion of enemata in young or newly-born animals, it is necessary to ascertain whether this deformity exists. Three conditions are observed:—1, that in which the anus is closed by ordinary integument, *externally*, or membranous septum a few inches *within* the rectum; 2, an imperfect rectum terminating in a *cul-de-sac* anterior to the perineal integument, a depression marking the spot where the anal opening should be; 3, rectum absent or deficient, the sigmoid flexure of the colon terminating the digestive canal by a *cul-de-sac*.

Treatment. — The first variety requires only simple division in a vertical direction, the passage of faeces being usually sufficient to prevent union; or a tent may be used for the purpose. The second form presents a more difficult aspect for remedy, besides being usually discovered only after the condition is aggravated by delay or approaching death. Examination should be conducted with the animal raised to a vertical position, in order that the impacted bowel may descend towards the perineum. After being satisfied the rectum is present, the animal is to be secured, placed on the back or side with the hind parts lowest. A vertical incision is then to be made in the anal space, while pressure is exerted on the hypogastric region. The index

finger of the left hand must be used to explore in advance of the knife. The line of dissection must correspond with the anterior coccygeal bones and sacrum, and care is required in order to avoid mistaking the bladder or wounding the pelvic vessels. The rectum being found, it is to be opened freely. Union must be prevented by the interposition of tents, &c., if required. In the last form nothing short of an artificial anus is required, which it is scarcely probable any proprietor would sanction, no matter the breed or value of the creature. Happily, however, the second and third varieties of the deformity are very rare.

PROCTORRHŒA. — Usually applied to discharge of blood from the anus. The causes are local hæmorrhage from violent tenesmus during obstinate constipation, invagination, strangulated hernia, &c. It is also a common sign of blood diseases. Under ordinary circumstances a cure is effected by a removal of the cause. As a result of local injury the general treatment for hæmorrhage must be adopted.

PRUSSIC ACID.—See Hydrocyanic Acid.

PTYALISM — Salivation—An Involuntary Flow of Saliva.—The secretion of saliva in the lower animals, during health, is abundant, and the

glands in which it is formed are very liable to be influenced by various causes, which are manifest in an augmented secretion. Thus: substances that produce nausea frequently increase the flow of saliva, and cause it to assume a ropy character from an admixture of mucus. Ptyalism is frequent after animals have fully partaken of many poisonous vegetables, as aconite, colchicum, white and black hellebore, darnel grass, mercurialis perennis, mercurialis annua, &c., and always accompanies mercurial poisoning, when there is also looseness of the teeth of horses, pigs, and dogs, in which, unlike cattle and sheep, those agents of mastication are always firm in health. Ptyalism is also observed in all conditions that give rise to DYSPHAGIA.

RAT-POWDER. — Various preparations are made use of in these mixtures, the poisonous principles of which are ARSENIC, BARYTA, CORROSIVE SUBLIMATE, CYANIDE OF POTASSIUM (see PRUSSIC ACID), PHOSPHORUS IN PHOSPHOR PASTE, NUX VOMICA, STRYCHNIA, *which see* for poisoning, treatment, &c.

REALGAR—KING'S YELLOW, *Red sulphide of arsenic*. Analogous to ORPIMENT, *which see*.

RED PRECIPITATE, PEROXIDE OF MERCURY—is distinguished beneath the microscope or

lens by its red shining crystalline scales; insolubility; great weight; soluble in hydrochloric acid, giving all the reactions common to corrosive sublimate; heated in a small tube, oxygen is freely evolved; becomes black, and red again on cooling—subliming and condensing in metallic globules until dissipated. See MERCURIAL POISONING.

RETENTIO SECUNDARUM—RETENTION OF THE PLACENTA—AFTER-BIRTH.—See ABORTION.

RHODODENDRON—THE ALPINE ROSE—belongs to the natural family *Ericaceæ*, or Heath-tribe, which includes many varieties of that plant, also *heaths* and *azaleas*. They possess acrid properties in addition to a narcotic effect upon the brain. If the quantity consumed be small, cerebral disturbance is probably almost the only symptom; but when animals have indulged liberally, then diarrhœa, dysentery, tenesmus, vertigo, &c., are the principal signs. It is said that the common heath produces among lambs on the Continent the so-called *Maladie de sologne*, or red water, and emesis among cattle, by which large quantities of the plant are ejected. The active principle, although not decidedly recognised at present, is not unlike the alkaloid veratria.

Treatment. — Cathartics, enemata, stimulants, calmatives, &c.

Tannic Acid is also indicated.

RUMENOTOMY.—The mechanical clearance of the rumen of cattle and sheep is frequently of great necessity. The operation is performed in the following way:—Secure the animal—if it be an ox or cow—with the *right* side against a stall partition, the assistants being disposed thus: One takes charge of the head; the second stations himself at the left shoulder, and the third at the left haunch. The animal is then placed in such a position that a fourth assistant, stationed on the other side of the partition, can pull at the tail. If required other assistants may be employed, but these may be sufficient for small or moderate-sized animals. One person will be required in addition, to pass the instruments at the various stages of the operation.

An incision is commenced, in the skin only, at a point midway between the anterior spinous process of the ilium and the last rib, four or five inches below the transverse processes of the lumbar vertebræ, and extended *downwards* about six inches. The muscular layers are next divided in succession, and lastly, the peritoneum, when the rumen will protrude. A small incision is then made into the rumen itself at the middle part, when the lips are immediately seized by tenacula, and drawn outwards over the lips of the parietal wound, while the operator enlarges the orifice in the viscus, first

downwards, and then in an upward direction: taking care, however, that the opening is not so large as the orifice in the muscles and skin. The ingesta now begin to fall out, which will enable the operator to draw the edges of the wound in the rumen still farther outwards, and prevent the food dropping into the abdominal cavity. The hand is then introduced and the rumen nearly emptied, all hard, dry pellets being carefully brought away. The reticulum and manyplies may be examined, and if the former contain indigestible substances they may also be removed. Purgative medicines, stimulants &c., are then placed within the rumen, in accordance with the condition of the third stomach, and the wounds closed. In the rumen, the uninterrupted suture is employed, and care is required to bring the edges of the peritoneal coat together. The end of the suture after being secured is then pushed through the wound, that it may eventually pass into the stomach. The muscles are united by strong thread, twine, or the metallic suture, including, in addition, the skin. If the skin be secured by itself, the quilled or twisted sutures are employed. See Sutures, Wound, Abdomen.

SAVIN, Juniperus Sabina.—A violent irritant and drastic purgative, producing death by gastro-enteritis, great depression (tympanites in cattle, emesis in carnivora), paralysis, coma, convulsions,

and death. The pulse rapidly becomes small, feeble, and imperceptible; pregnant animals abort; a slimy mucus flows from the anus, mixed with blood—proctorrhœa.

Treatment.—Emetics in dogs, cathartics in other animals. In cattle, when the quantity of the plant taken is large, the rumen should be emptied mechanically. To these measures powerful stimulants are required in small and oft-repeated doses. Mucilaginous drinks are required to sheath the surfaces from the acrid volatile oil of the plant, and opiates to relieve the pain and tenesmus.

SHOULDER.—In this region various injuries occur. *Open joint* is not uncommon from punctures with a fork or contact with projecting hooks, nails, &c. The superior tendon of the flexor brachii coraco-radialis is sometimes injured, at others the muscular belly is the locality of rupture, which is evidenced by the inability to extend the arm. In the former, pain is evident at the point of the shoulder, with more or less bursal distension. In the latter, lameness becomes chronic, the difficulty of extension is aggravated daily, the muscular fibre being replaced by dense non-contractile tissue. The seat of injury in recent cases is also identified by the presence of heat, pain, and tenderness, &c. *Shoulder slip* also occurs. This is sprain or laceration of the fibres of the spinati muscles, together

with, probably, the abductor magnus and teres externus. The humerus, lacking the tension of these muscles, rotates outwards at every step with unusual freedom. Pain is expressed in recent cases, and wasting of the muscles just named in chronic stages. Rest, laxatives, cooling lotions, rubefacients, vesicants, &c., are required in the muscular and tendinous affections. For treatment of wounds in bursal cavity see OPEN JOINT; also TERES INTERNUS.

SCALDS.—See BURNS.

SEROUS CYST OR ABSCESS.—See ABSCESS.

SODA.—See CAUSTIC ALKALIES.

SCRATCHES, received from rugged portions of bone in making post-mortem examinations, are liable to prove troublesome, partly from the semi-decomposed or poisoned state of the body, and entrance of irritating particles in dispensing medicine, &c., afterwards. The knuckles and other parts of the hand suffer in administering boluses to horses and dogs, or from the claws of cats. Scratches—of the first kind particularly—should be well washed in warm water, and sucked by the mouth, lunar caustic being afterwards freely applied where poison

is suspected. A light portable balling iron* is a useful agent in preventing such injuries to the hand, which, in winter time, and by washing in cold water, are frequently very much aggravated.

SPINE.—Dislocations and fractures of the spinal column generally accompany each other, from which incurable paralysis results. Sensation and motion are lost behind the part, and the animal cannot rise. If the tail be raised it falls without any muscular effort; fæces and urine are passed involuntarily. The pulse is full and hard at first, but, varying with the amount of damage done, sooner or later becomes small, weak, and at length imperceptible. Pain is intense, struggles are sometimes violent, but confined to the fore extremities, &c., respiration impeded, death taking place in from two to twenty-four hours. In slight cases the animal may continue for a week, congestion of the lungs being the immediate cause of death.

SPRAINS.—Laceration of the Fibres of Muscles, Tendons, and Ligaments.—Muscular sprains are best treated by means of hot fomenta-

* Messrs. Arnold & Sons, 35, West Smithfield, London, have made, according to pattern supplied, a very neat folding instrument, suitable for keeping the mouth open during examination of the teeth, administering balls, or passing the probang, &c. &c.

tions, poultices, &c., by which circulation may be re-established and the removal of parts by suppuration avoided. Care should be exercised in order to prevent the effects of cold after the above are made use of. The parts should be quickly dried and protected by flannel coverings, &c. In sprains of ligament or tendon, an uninterrupted stream of cold water is probably the best remedy. Where this is impracticable hot fomentations should be adopted, observing the same care as has just been insisted upon. It should be borne in mind that neither the application of cold nor heat to a part will prove of service as a curative measure, unless persisted in—not for such periods as fifteen or twenty minutes, but—for hours. Herein consists the first secret of success. The second is rest—*absolute rest*. The collateral effects of sprains, as swelling, weakness, &c., are to be met with stimulating liniments and friction, &c.; the actual cautery, or vesicatory ointment may be applied. Constitutional disturbance must be met with febrifuges, laxatives, low diet, &c.

STARVATION.—Animals deprived of food suffer in proportion to their condition and previous mode of living. As soon as such can be recovered, they should be placed in a moderately warm or well sheltered building, and food of easy digestion administered in very small quantities at frequent

intervals. They should be encouraged to lie as much as possible, a good bed, and light clothing provided when circumstances require it. A long walk to the farm or buildings should *at first* be avoided; a few poles and a rick-cloth will make a temporary tent, or, when this is impracticable, the animal may be placed on rafters, or a gate, &c., with straw beneath him, and drawn to a more suitable locality. Vegetable tonics may be given after animation is restored, and the animal is capable of taking exercise.

STILL-BIRTH—Asphyxia Neophytorum.—See Asphyxia.

STING.—The effects of stinging by wasps and bees are sometimes productive of great pain in the lower animals. Ammonia, in the form of the aromatic spirits, frequently allays the irritation at once, if the application is prompt. Severe constitutional signs must be allayed by sedatives, &c., and extensive swelling treated by incessant cold. If the head and neck are much swollen the trachea may require to be opened.

STOMACH-PUMP.—The character of the food upon which the lower animals subsist, frequently renders the employment of the stomach-pump a protracted and not always successful remedy. In many cases of poisoning the contents of the organ are

probably dry, or composed of coarse particles, which would hinder the action of the pump, and prevent the abstraction of fluids. When the poison is of a soluble character its abstraction may be effected to a great extent by first injecting a quantity of tepid water and drawing it out again. This may be repeated as long as the patient will allow, and until the fluid return unchanged. Care must be exercised to avoid drawing the membrane of the stomach within the orifice of the tube, and this is best accomplished by observing the quantity of fluid that has been injected, in order that the whole be not abstracted before a fresh supply is introduced. In the passage of the tube similar precautions are to be observed as when the PROBANG is used.

STRANGULATION—*Asphyxia Suffocationis.*—See ASPHYXIA.

STRANGULATION OF INTESTINES.—See HERNIA, GUT-TIE.

STRANGURY.—See BLADDER, CANTHARIDES.

STRYCHNIA.—The dose of this powerful drug is from gr. j to gr. ij for the horse and cow, and for the dog about gr. 1-15th, or gr. 1-12th. About half a grain in solution—in very dilute acids, as the acetic or sulphuric—exhibited endermically,

and repeated according to circumstances, proves very useful in paralysis, &c., and is sometimes the means of restoring action when coma has set in, and the power of swallowing is deficient or lost. Five grains have produced poisoning in the horse, and seven have proved destructive. Signs of poisoning have rapidly occurred in a small pug dog, after twelve doses, each containing 1-24th of a grain, had been administered morning and evening regularly. One grain, used endermically, killed a very large dog, producing the most violent opisthotonos and pain. In poisoning by strychnine or nux vomica, the animal should receive animal charcoal, oleaginous draughts, purgatives, &c., to clear the bowels as quickly as possible. Dogs should receive large quantities of animal charcoal, followed by emetics. Various stimulants, as sulphuric ether, alcohol, nitric ether, ammonia with camphor, belladonna, morphia, enemas of tobacco-smoke, &c., should likewise be given. Chlorine water, *infusion of galls*, strong green tea, or even tobacco, are useful; tannic acid and tincture of iodine are likewise used as antidotes. Galvanism, as directed for tetanus, is a valuable agent in mitigating the tonic spasm resulting alike from that disease as well as overdoses of strychnia. Artificial respiration should never be omitted. It is necessary to bear in mind, that during the existence of constipation, strychnine or nux vomica should not be heedlessly

continued, as by retention within the stomach or intestines unacted upon for some time, they may lead to cumulative results. The bowels should be kept in order, and on the first signs of constipation a laxative diet or medicine administered, and the strychnine withheld a day or two. See Nux Vomica.

SUDDEN DEATH in horses may arise from long-continued, but hitherto unnoticed, disease of the heart. The hind limbs and lower parts of the chest and abdomen are then usually œdematous. Among the many causes are, cerebral apoplexy, pulmonary apoplexy; rupture of the diaphragm, stomach, intestines, liver, spleen, womb, bladder; poisons, hæmorrhage, concussion of the brain, fractures of the cranium and vertebræ, with compression of the brain or spinal cord, lightning—*asphyxia electrica*, choking, &c. Among cattle and sheep, tympanites—*asphyxia suffocationis*, black quarter, blain, splenic apoplexy, braxy, heaving pains, rupture of womb, &c., as well as most of the above. Pigs succumb from apoplexy, chiefly with enteric fever or typhus, and dogs from choking, apoplexy, and epilepsy, &c.

SUFFOCATION.—See Asphyxia.

SULPHATE OF MERCURY, Turpeth, or

Turbiths Mineral, is almost insoluble, heavy, has a yellow colour, which darkens by exposure to light, and has a strong metallic taste. Reduced by carbonate of soda, metallic mercury results. Boiled with caustic potash, peroxide of mercury and sulphate of potash is formed. See Mercurial Poisoning.

SULPHURIC ACID.—See Acids.

SULPHURET OF ARSENIC.—See Orpiment.

SULPHURET OF MERCURY.—See Vermilion.

SULPHURETTED HYDROGEN.—See Coal Gas.

SULPHUROUS ACID GAS.—See Coal Gas.

SUTURES are of the following kinds—viz., the *interrupted*, *uninterrupted*, *twisted*, *quilled*, and *metallic*. We describe their mode of constitution and use.

The Interrupted Suture.—A suitable needle, straight or curved, and having triangular or oval points and cutting edges, armed with stout double thread which has been well drawn over wax—is passed through the lip of the wound from *without*

inwards, and taken up that of the opposite side from *within* outwards. Both ends of the thread are then brought together on the outer side and secured by a firm knot, but without forcible straining. A number of these are inserted, proportionate to the wound, at intervals of half an inch or three quarters, avoiding the enclosure of hair which sometimes hangs loosely from the sides.

The *Uninterrupted* or *Continuous Suture* is made by passing the needles, as stated above, through the skin repeatedly from side to side, until the opposite end of the wound is reached. The intervals to be observed are similar to those stated under interrupted suture, and the thread is secured at each extremity of the wound, or the two are brought together and tied in the centre. The former plan is to be preferred.

The Twisted Suture.—Instead of a needle and thread, &c., pins are used. These may be prepared with triangular points by a simple apparatus described at page 125 of the "Edinburgh Veterinary Review," 1865.* Each pin, selected according to the size of the breach, is passed through the lips of the wound as already described, and soft twine is then twisted beneath and over the pin in the form of the figure 8.

The *Quilled Suture* consists of the halves of a

* See also Warne's illustrated edition of "Clater's Cattle Doctor."

cylindrical piece of wood about half an inch in diameter, which are placed upon the lips of the wound and secured in that position by the interrupted or metallic sutures. The object of the strips being to produce equal pressure and more even apposition of the divided edges.

The Metallic Suture.—In this, wire of a very soft and pliable character is made use of, and sometimes even silver wire is employed, but neither possess advantages over those already mentioned. A suitable needle is employed, and the stitches are passed as directed for the interrupted variety, each end being cut off and twisted [redacted] and each other.

SYNCOPE.—See Fainting, Hæmorrhage.

TANNIC ACID.—See Galls.

TEMPERATURE—Animal Heat.—The normal temperature of our domestic animals, according to observations already made, assumes a variation peculiar to each species; and, as will be seen by the following table,* the range is influenced by rest and exercise, &c.:—

* "The Thermometer as an Aid to Diagnosis in Veterinary Medicine." By G. Armatage, M.R.C.V.S. London: H. Kimpton, 82, High Holborn. Edinburgh: Maclachlan and Stewart.

Animals.	Average during confinement.	Range in confinement.	Average in work &c., or at liberty.	Range during work, or at liberty.
Sheep	102 5-10ths	102 to 103*	104 5-10ths	104 to 105
Lambs . . .	Undetermined	Undetermined	104 9-10ths	104 2-5ths to 105 2-5ths
Pigs	101 6-10ths	101 to 102 2-5ths	103 2-5ths	103 to 104
Oxen and Cows	100 4-5ths	100 2-5ths to 101 3-5ths	101 4-5ths	101 to 102
Calves and Starks . .	100 9-10ths	100 1-10th to 100 6-10ths	101 9-10ths	101 5-10ths to 102 5-10ths
Dogs	99 10-30ths	98 8-10ths to 99 9-10ths	102 2-10ths	100 2-10ths to 102 5-10ths
Horses . . .	99 2-10ths	99 to 99 6-10ths	100 3-5ths	100 to 101

* Dr. Sanderson in his Report to Commissioners, 1866, pp. 18—51.

It also appears conclusive, by an extended investigation of the subject, that—

1. Any elevation of temperature beyond, as well as decline below, the registrations given, particularly if such elevation or depression is persistent, are sure indications of the presence of disease.

2. Such elevation, as correctly measured by one of Casella's self-registering thermometers,* is a reliable indication of the *amount* of fever present in any form of disease.

3. The thermometer is also a test of the progress of disease towards a favourable or fatal termination, when other symptoms do not afford the least estimate.

4. All diseases characterized by a period of incubation exhibit an elevation of temperature during that period, which is decidedly peculiar to it, and premonitory to that which is observed throughout the attack.

5. A certain though not invariable relation exists between the temperature, pulse, and respiration, which, by estimate, greatly aids the formation of a correct diagnosis.

6. As the production and maintenance of animal temperature is dependent upon certain actions within the organism, the range in disease will vary in accordance with the effects each kind exerts

* L. P. Casella, Maker to the Admiralty, 23, Hatton Garden, London, E.C.

upon them; or, in other words, all maladies that run a definite course possess a range of temperature which may be viewed as characteristic of each type.

TENESMUS—Violent contraction and straining at the anus, without the ability to discharge fæces.—This is a condition that affords an accurate diagnosis in many affections of the abdominal viscera. Protrusion of the rectum is frequently great, and in young animals it is even everted. The membrane becomes red and injected, and hæmorrhage—proctorrhœa—may arise in consequence of the pressure. Injections are returned; the hand cannot be passed within, and all interference tends to aggravate the disposition to strain, and augment the suffering. Tenesmus accompanies invagination, strangulation by pedunculated tumours, hypertrophy of the appendices epiploicæ, hernia, twist, pressure from tympanites, &c.; rupture of the stomach or intestines, immovable obstructions of the canal, as calculi, stercoral matters, &c. Whenever it exists in a violent form it becomes a sure sign of serious conditions within.

TERES INTERNUS and LATISSIMUS DORSI.—Sprain of the muscles not unfrequently occurs in horses used about railways. The foot and shoe are fixed between the V points of the rails in pass-

ing backwards, and the animal at once forcibly hangs, or is driven back by an approaching waggon. The signs are apt to be confounded with fracture of the ulna. See Elbow. Rest, laxatives, low diet, and active stimulants externally are the means of cure. In some animals the injuries sustained are incurable.

TETANUS. — In this affection the endermic method of administering remedies bids fair to become beneficial. Prussic acid, morphia, atropine, conium, &c., or tinctures of the plants containing the last three substances, are readily brought to bear upon the system by the endermic syringe. Injections also, *per anum*, of chloric ether and its allies, prove serviceable: and in the traumatic form the benumbing effects of carbolic acid, as used in the Antiseptic Treatment, are frequently of great service in reducing the intensity of the paroxysms. It is not prudent to rely upon the uninterrupted exhibition of one agent beneath the skin. They should be alternated with each other, or used occasionally as mixtures where no risk of chemical union and destruction is feared. That neglected branch of veterinary therapeutics—galvanism—should also be tried, opposite poles of the instrument being placed at extremities of the spine, and maintained there with wet sponges or cloths for some hours. Where these measures are insisted

upon, that formerly supposed *sine quâ non*—catharsis—is dispensed with. Our professional friends are earnestly invited to extend their observations on these points, and communicate them for collective benefit.

THORAX, Injuries to.—These are punctures and laceration of the intercostal muscles, fractured ribs, sternum, or cartilages, and laceration of the lungs. Simple puncture or laceration of the intercostal muscles may be successfully dealt with, if the wounds are not large, little structure destroyed, and the case is seen early. The admission of air to the chest should be prevented as far as practicable, dressings being applied by means of glue or pitch-plasters.

Treatment should be based on the principle stated under lacerated or punctured wounds, and movement of the parts limited as far as possible. Bandages round the chest are worse than useless in these cases, as well as for fractured ribs, as pressure by them tends to throw the affected parts out of a proper position. Fractured ribs, cartilages, or sternum are usually associated with damage to the lungs, and notwithstanding the injuries may be extensive and severe, urgent symptoms are frequently delayed ten or twelve hours. Many cases have been known in which from one to six ribs have been fractured, yet only a skin wound was

observed externally. In conjunction with the setting in of severe constitutional symptoms, there is a peculiar *grunt*, which becomes more distressing to the ear as the disease advances. Death usually ensues in twenty-four hours, when the lungs are found gorged with blood, and the thorax charged with a large quantity of serum, with blood materials intermixed.

THROAT, Substances in.—See Choking, Neck, Probang, Tracheotomy.

TINCTURE OF STEEL.—See Iron.

TOBACCO.—The smoke of burning tobacco is a valuable calmative in violent affections of the bowels, poisoning by nux vomica, strychnine, &c. When administered internally in the form of solution or enema, or applied to the skin, poisoning is apt to take place. The signs are those which characterize all other narcotic poisons, for which stimulants, external friction, Artificial respiration, Galvanism, &c., will be required.

TRACHEA.—See Neck.

TOXÆMIA—A Poisoned State of the Blood—Blood Disease.—Such a condition may arise in consequence of an interruption to the action of

some of the depurating organs, by which the effete matters of the system should be thrown off. They then accumulate in the blood, and disease is the result. This effect is observed frequently when lambs are covered with the skin of others to cause their adoption by another ewe, and as a result of the use of salves to sheep without proper care. See Apnœa. Toxæmia occurs as the result of disease of the lungs, brain, &c.; the introduction of contagious virus within the body, and poisonous substances—toxic principles—to the blood. See Poisoning.

Tracheotomy—Opening the Trachea.—This operation is performed at the upper portion of the neck, at which part the windpipe is most superficial. The head is secured by an assistant, who extends the nose in order to tighten the skin and muscles of the inferior cervical region. The point selected is about the upper third: a longitudinal and central incision—about two inches long—is carried through the *skin* and *panniculus*, between the *sterno-maxillaris* muscles of each side. The united tendons and fleshy fasciculi of the *sterno-thyro-hyoideus* are separated by slight dissection, or pushed aside, when the trachea becomes visible. An opening is made in the windpipe in three ways—first, by longitudinal incision across two rings, which are separated and the tube passed between; second, by abscission of portions sufficiently large to

admit the tube; and, third, by passing the proper trocar and cannula between the rings, the cannula being retained and serving as an ordinary tracheotomy tube. It will facilitate the operation if an assistant is at hand to draw away the skin of each side, after incision, by means of tenaculæ; and particularly if opening of the trachea by abscission is performed, as the operator's hands require to be free. One hand seizes the portions of cartilage, by means of a hook, before they are separated, as during a forcible inspiration, with a partial opening of the trachea, pieces insecurely held may be drawn inwards and pass into the bronchia. The tube should be removed daily, and it, with the wound, thoroughly cleansed by solutions of carbolic acid, &c. Trial of the respiration should also be made periodically, in order to test the time when the tube can be removed with safety and the wound permanently closed.

TREADS (on the Coronet).—See Paronychia.

TREPHINE.—The instrument employed to open the *frontal* and *maxillary sinuses* for the evacuation of accumulations of pus, &c.

The *frontal sinus* is reached by piercing the frontal bone, at a point about one and a half inches anterior to an imaginary line extending between posterior angles of the supra-orbital processes. At

that part the frontal sinus is deepest. An osseous septum exists in the central line, which divides the space beneath the bone into two cavities. Each frontal bone, therefore, may require to be pierced.

The *maxillary sinus* is most readily entered at a point about one inch superior to the maxillary spine, and at the median part.

TURPENTINE, Oil of.—This is a favourite remedy with some persons for the cure of colic, &c., and is administered in repeated doses to the great detriment, if not absolute poisoning, of the animal. It is an irritant, and should be banished as a remedy, except in proper doses and isolated instances. The body after death, and even the breath during life, give out strongly the odour of the drug. Treatment as for Creasote.

TWIST (of Intestine).—See Invagination.

URETHRA, Opening of.—See Catheter.

UTERUS, Bleeding from.—See Hæmorrhage after Parturition.

VENESECTION—Abstraction of blood from a vein.—The general practice of bleeding animals in health, and as a cure in disease, has deservedly fallen into disuse. An extended study of the

nature of disease has fully exemplified its inutility except in a very few instances, and then only where the effect upon the circulation is intended to be severe, prompt, and lasting. In nearly all cases ACONITE proves a most efficient substitute. Venesection is adapted to plethoric diseases, as parturient apoplexy, lymphangitis, as well as the approaching apoplectic states of acute indigestion and extensive inflammation of large organs, as in pneumonia. To be effective, it should always be general. Local bloodletting is even inferior to the action of such systemic remedies as aconite, &c. The jugular vein offers the greatest facilities for the process, which, in horses, may be reached on the right side with the lancet, or on the left by the fleam. Blood should always be drawn rapidly. For this purpose a large instrument must be employed, in order to make a tolerably large orifice. The vessel is first compressed, that the upper part may be distended, and clearly show its outline beneath the skin. The proceedings, however, are somewhat modified by the choice of side and instrument to be made use of. In closing the wound in the skin, the common twisted suture is sufficient: the lips should be carefully placed in apposition, and the ligature applied with only sufficient force to prevent hæmorrhage. If too tight, sloughing and phlebitis may result. The instruments should be scrupulously clean; the skin also must not

be pulled away from the neck in putting in the pin; as the first introduces a foreign body to the wound, and the second admits of subcellular infiltration of blood, which produces inflammation of the vein. Animals suffering from mange also should be cautiously dealt with, as the acarus may produce similar effects, by insinuating itself in the lips of the wound. The head should be afterwards tied up to the rack or to a ring, &c., high up in the wall, to prevent the possibility of the suture being rubbed out.

Never undertake to bleed an animal when the pulse is small and weak. The only good effects are to be gained by the depressing effects of venesection upon a full or full and strong pulse. It is not necessary as a rule to bleed animals a second time in the same attack: well-regulated treatment, and the choice of proper remedies, can always insure the necessary effects which a proper bloodletting has initiated; and, by such precautions, carefully observed, the few occasions upon which the process is now resorted to have become a mark of skilful practice.

VERATRIA—the active principle of Colchicum, Veratrum Album, &c.—See Tannic Acid.

VERATRUM ALBUM—White Hellebore. —Produces great depression, haggard look, slimy

tongue, hard, small, and quick pulse, uneasiness, retchings, ropy discharge of saliva, and attempts to vomit. These signs become greatly intensified, gastro-enteritis follows, with rapid decline of power, singultus, convulsions, unconsciousness, and death.

The *antidote* is *tannic acid*, and treatment generally, as for Colchicum and narcotico-acrid poisons.

VERDIGRIS.—See Copper.

VERMILION—Sulphuret of Mercury, Cinnabar, *sometimes called the persulphuret.*—This compound may be known by the [redacted] tint from which it obtains its name. It is insoluble in water and alcohol; volatilizes when heated alone, but yields globules of mercury by reduction in a tube with potash.

VERTIGO—Megrime, Cerebral Congestion. —Commonly mistaken for Epilepsy, and due to pressure from tight collars, assisted by impervious jugular veins and malformation of the neck. From comparative discontinuance of the practice of blood-letting, vertigo is not so common as in former years. The attacks are confined to periods of work, particularly when the animal is drawing heavy loads, and up severe inclines. Suddenly the head is elevated and thrown backwards, the neck is seized by spasms, eyes are staring, pupils dilated,

and mucous membranes injected; nostrils dilated, veins of face turgid, and muscular twitchings are observed; the animal reels, staggers, and falls blind and unconscious, or runs impetuously forward some distance before doing so. If the position of the collar be changed, recovery almost immediately follows, and the animal resumes his journey as if nothing of the kind had happened.

Treatment consists in working the animal with a larger collar to avoid pressure on the jugular veins, permanently adopting the use of the breastplate, or removing him to work that can be performed without collar. Medicines are of no service, the causes being of a mechanical, and frequently, of an irremovable nature.

VOMITION.—See Emesis.

WHITE VITRIOL.—See Zinc.

WOLF'S-BANE.—See Aconite.

WOMB, Bleeding from.—See Hæmorrhage after Parturition.

WOUNDS are thus classified:—the *incised*, *lacerated*, *contused*, and *punctured*.

Incised Wounds.—In large wounds of this variety bleeding is sometimes extensive, when pro-

ceed as advised under HÆMORRHAGE. In small wounds, simple closure, or the application of water, ice, ether spray, &c., is usually sufficient. Remove carefully all blood clots and extraneous matter by the fingers or forceps, and avoid washing, fomentations and poultices, whenever possible, as they are inimical to union by the first intention. When muscles have been divided transversely, place the parts in a favourable position for the severed ends being brought together, as well as to obviate tension on the skin. Insert sutures according to preference, taking firm hold of the parts, and effect a union of the [illegible] and with as little corrugation as possible. At the lowest or most dependent part of large wounds, a space may be left to allow of the escape of pus. See SUTURE. Cold water dressings, lotions of lead, astringents, or simple spirit and water, tincture of benzoin or myrrh may be used, or, in preference, the ANTISEPTIC TREATMENT. When high vascular action occurs, the various febrifuges will be required; and collapse or shock after hæmorrhage must be met with stimulants, without however incurring the risk of the development of high fever on reaction taking place. In most cases absolute rest is required, and it may be necessary to place the animal in slings, or otherwise prevent his lying down.

LACERATED WOUNDS.—These are usually the

result of violent tearing, and seldom exhibit any tendency to danger from hæmorrhage. The parts are unevenly divided, vitality impaired, and do not always admit of union by the means described under the last variety. All foreign bodies should immediately be removed by forceps, gentle fomentations, or even poultices if desirable. Parts may be secured by sutures, but generally the MANY-TAILED BANDAGE is preferable. Scarifications and even stimulants may be needed to the parts, and the system will require attention when shock ensues in extensive lacerations.

CONTUSED WOUNDS.—These are of frequent occurrence among the lower animals, and occasionally prove troublesome. The loss of vitality is usually great, and much sloughing takes place, particularly if the treatment has been delayed, or imperfectly applied. Fomentations or poultices should be employed for some hours incessantly—the former are most effectual at a temperature of 118° Fahr., and the resulting depression and opposition to circulation combated by stimulants, liquefacients, &c. Laxatives are of great benefit at a later stage, and liniments of soap, camphor, turpentine, &c., to restore circulation in the parts. On the appearance of healthy discharges, the usual healing applications already mentioned under INCISED WOUNDS are admissible.

PUNCTURED WOUNDS, whenever they occur, are

to be viewed with apprehension until a correct diagnosis is made. The various internal cavities, viscera, important vessels, nerves, joints, and even bones may be seriously injured. Explore carefully and remove all foreign bodies, clear the wound of blood and discharges, and dress by injection if flesh only is involved. See Abdomen, Bowel, Ribs, Open joint. Subsequent extensive swelling may be treated by scarifications. Free discharge of matter should be provided for, and assisted, if required, by incision. Constitutional disturbance must be treated as already detailed.

YEW.—The leaves and cuttings of the yew are highly poisonous, producing death in a short space of time when large quantities have been consumed. The active principles are narcotico-acrid, and give rise to great depression, laboured breathing, small, quick, and feeble pulse, amaurosis, paralysis, unconsciousness, convulsions, and death. Strong purgatives should be promptly administered—the rumen of cattle may be previously cleared mechanically. Diffusible stimulants will be required during the stages of depression, and calmatives to combat the abdominal pain; cold affusions to the head, artificial respiration, galvanism, &c., and frictions to the skin; strychnine by the endermic method. See Savin.

ZINC, Sulphate of.—Poisoning may ensue in

consequence of an administration of this salt in mistake for the sulphate of magnesia. The *symptoms* are those which denote the presence of irritants generally: as violent constitutional disturbance and abdominal pain, diarrhœa and tenesmus —in dogs and pigs vomiting; partial sweats injection of M. M., nausea, &c.

Treatment consists of the exhibition of copious draughts of albuminous fluids, as milk, flour and water, eggs, &c., and warm water, if it can be promptly withdrawn by the pump. Tannic Acid and substances containing it are very useful; cal-